# Recreational Harvest Control Rule Framework 

Framework 17 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan

Framework 6 to the Bluefish Fishery Management Plan

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


November 21, 2022

Prepared by the Mid-Atlantic Fishery Management Council (Council) in cooperation with the Atlantic States Marine Fisheries Commission and the National Marine Fisheries Service (NMFS)

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## 1 Executive Summary

### 1.1 Purpose of the Action

The purpose of this action is to consider modifications to the process for setting recreational bag, size, and season limits (i.e., measures) for summer flounder, scup, black sea bass, and bluefish. This action is needed to ensure that measures prevent overfishing, are reflective of stock status, appropriately account for uncertainty in the recreational data, take into consideration angler preferences, and provide an appropriate level of stability and predictability in changes from year to year. Additional details on the background and history of this action are included in Section 4.

### 1.2 Summary of Alternatives Considered

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission's Policy Board (Policy Board) considered four sets of alternatives through this action. Alternative Set 1 (Section 5.1) includes alternatives that define the process used to set recreational measures for all four species. Alternative Set 2 (Section 5.2) defines the target metric for setting measures under Alternatives 1C-1E. Alternative Set 3 (Section 5.3) includes alternatives regarding the Commission's conservation equivalency process. Alternative Set 4 (Section 5.4) considers one minor component of the recreational Accountability Measures (AMs) under some alternatives in Alternative Set 1. All alternatives are summarized in Table 1 described in more detail in Section 5.

None of the alternatives would implement specific bag, size, or season limits. Those measures would be established and modified through separate, future specifications actions.

### 1.2.1 Summary of Alternative Set 1 (Process for Setting Recreational Measures)

Alternative 1A is the no action alternative. Under this alternative, measures would be set following the current Fishery Management Plan (FMP) requirements. A key element of this alternative is that measures would be set with the primary goal of allowing harvest to meet but not exceed the annual recreational harvest limit (RHL).

Alternative 1B is referred to as the Percent Change Approach. Under this alternative, a determination would be made to either liberalize, restrict, or leave measures unchanged based on two factors:

1) Comparison of a confidence interval around an estimate of expected harvest under status quo measures to the average RHL for the upcoming two years and
2) Biomass compared to the target level, as defined by the most recent stock assessment.

These two factors also determine the appropriate degree of change, defined as a percent change in expected harvest, as described in Section 5.1.2. Alternative 1B is a preferred alternative.

As described below, Alternatives 1C-1E would all establish a set of management measure "bins" with associated measures. The selection of the appropriate bin for each specifications cycle would be defined by a combination of stock status and fishery metrics. The specific metrics vary by alternative. The most liberal measures would be assigned to the bin with the best combination of metrics and the most restrictive measures would be assigned to the bin with the worst combination of metrics.

Alternative 1C would use an approach called the Fishery Score to define management measure bins. The Fishery Score combines four metrics (biomass relative to the target, recruitment,
fishing mortality, and fishery performance) into one value which would be used to place the stock into one of four bins with corresponding management measures.
Alternative 1D is referred to as the Biological Reference Point Approach. Under this alternative, biomass compared to the target level and fishing mortality compared to FMSY would define seven management measure bins. Each bin would have a set of default measures which would be implemented the first time the stock is placed in that bin. If a stock remains in the same bin based on updated biomass and fishing mortality information, then the default measures may remain in place, or slightly more liberal or slightly more restrictive measures may be implemented based on consideration of biomass trend, recent recruitment, and whether recent RHLs have been exceeded. Considering the default and secondary measures, this alternative includes 13 sets of measures.

Alternative 1E would use an approach called the Biomass Based Matrix Approach to set measures. This alternative would define six bins with associated measures based on biomass compared to the target level and recent trends in biomass.
Alternatives 1B-1E may not be used for stocks under a rebuilding plan. In some cases, Alternatives 1 C -1E may be used to implement temporary management measures until rebuilding plan measures are implemented. Bluefish is currently under a rebuilding plan; therefore, these alternatives may not be used for bluefish until the stock is no longer under a rebuilding plan.

In advance of the June 2022 Council and Policy Board meeting when final action took place, Council staff put forward a recommendation for an alternative which was within the range of alternatives $1 \mathrm{~A}-1 \mathrm{E}$. Under the Council staff recommendation, the only required modifications to the FMPs would be to allow recreational measures to be set for two years at a time. As with Alternative 1 A , the goal of measures would be to allow harvest to meet but not exceed the RHL. The Council staff recommendation is described in more detail in Section 5.5. Given that it was not supported by the Council and Policy Board and was not considered prior to the meeting when final action took place, it is not further analyzed in this document.

### 1.2.2 Summary of Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E)

Alternative Set 2 defines the target metric for determining the appropriate measures for each bin under Alternatives 1C-1E (see previous section). Measures would aim to achieve a target level of recreational harvest (Alternative 2A), recreational dead catch (Alternative 2B), or recreational fishing mortality (Alternative 2C) deemed appropriate for the stock conditions associated with each bin. These alternatives are not relevant for stocks in a rebuilding plan (as is currently the case for bluefish).

### 1.2.3 Summary of Alternative Set 3 (Conservation Equivalency)

Alternative Set 3 considers modifications to the use of conservation equivalency through the Commission process for these four recreational species.

Alternative 3A would maintain the ability for individual states to submit proposals for alternative measures that are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Sets 1 and 2) as the measures that would otherwise be implemented. This is a preferred alternative.

Alternative 3B would allow regional groupings of states to submit proposals for alternative recreational management measures which are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Sets 1 and 2) as the measures which would otherwise be implemented.

Under Alternative 3C, conservation equivalency under the Commission process would not be permitted for any of the four species on a state or regional level.

### 1.2.4 Summary of Alternative Set 4 (AMs under Alternatives 1B, 1C-1, and 1E-1)

As described in more detail in Section 5.4, Alternative Set 4 considers one minor component of the recreational accountability measures (AMs) under Alternatives 1B, 1C-1, and $1 \mathrm{E}-1$. This alternative set is not relevant for other alternatives.

Under Alternative 4A, when a reactive AM has been triggered by a recreational annual catch limit (ACL) overage and the most recent biomass estimate is between the target and the threshold, catch relative to the ABC would also be considered. The response to the overage would be more strict if the ABC was also exceeded (e.g., a payback would be required or the stock would be placed in a more restrictive bin, depending on the alternative). If only the recreational ACL was exceeded, the response to the overage would be less strict (e.g., measures would be revised but a payback would not be required or the stock would remain in its current bin, depending on the alternative).
Under Alternative 4B, when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold, consideration would also be given to the most recent estimate of fishing mortality relative to $\mathrm{F}_{\text {MSY }}$ in the year(s) when the overage(s) occurred. The AM response would be more strict if $\mathrm{F}_{\text {MSY }}$ was also exceeded (e.g., a payback would be required or the stock would be placed in a more restrictive bin, depending on the alternative). If only the recreational ACL was exceeded, the AM response would be less strict (e.g., measures would be revised but a payback would not be required or the stock would remain in its current bin, depending on the alternative). This is a preferred alternative.

Table 1: Summary of alternatives considered through the Recreational Harvest Control Rule Framework.

| Alternative Set 1: Recreational measures setting process | Alternative Set 2: Target metric for setting measures under alternatives $1 \mathrm{C}-1 \mathrm{E}$ | Alternative <br> Set 3: <br> Conservation equivalency | Alternative Set 4: Accountability measures |
| :---: | :---: | :---: | :---: |
| 1A: No action (current FMP requirements) | N/A | 3A No action (states retain ability to propose conservation equivalent measures; preferred) | - 4A No action (catch compared to the ABC ) <br> - 4B Fishing mortality compared to $\mathrm{F}_{\text {MSY }}$ (preferred) |
| 1B Percent Change Approach (preferred with 3 year sunset) Sub-alternative sets 1B-1 and 1B-2 define appropriate percent change | N/A |  |  |
| 1C Fishery Score Approach 1C-1: Reactive AMs similar to current AMs <br> 1C-2: Reactive AMs based on overfishing status | 2A Recreational harvest target <br> 2B Recreational catch target 2C Recreational fishing mortality target | 3B Regional conservation equivalency <br> 3C <br> Conservation equivalency is disallowed | Only under sub-alternative C-1 (not applicable under C-2): <br> - 4A No action (catch compared to the ABC ) <br> - 4B Fishing mortality compared to $\mathrm{F}_{\mathrm{MSY}}$ |
| 1D Biological Reference Point Approach |  |  | N/A (AMs are incorporated into the main alternative) |
| 1E Biomass Based Matrix Approach 1E-1: Reactive AMs similar to current AMs <br> 1E-2: Reactive AMs based on overfishing status |  |  | Only under sub-alternative E1 (not applicable under E2): <br> - 4A No action (catch compared to the ABC ) <br> - 4B Fishing mortality compared to $\mathrm{F}_{\mathrm{MSY}}$ |

### 1.3 Summary of Impacts of Alternatives

The expected impacts of each alternative on human communities (socioeconomic impacts), summer flounder, scup, black sea bass, bluefish, non-target species, habitat, and protected species are described in detail in Sections 7.1-7.5. The expected impacts are briefly summarized below and in Table 2.

### 1.3.1 Impacts of Alternative Set 1: Process for Setting Recreational Measures

## Socioeconomic Impacts of Alternative Set 1

## Alternative 1 A

Under Alternative 1A, recreational measures would be set with the primary goal of allowing harvest to meet but not exceed the RHL. The RHL is set based on the most recent stock assessment information and therefore accounts for stock status. The RHL should maintain the positive stock status for stocks with a currently positive stock status and should contribute to an improved stock status over time for stocks with a currently poor stock status. As such, this alternative should maintain recreational fishing opportunities in the future (a positive socioeconomic impact).

However, advisors and other recreational fishery participants have expressed frustration that measures do not always appear reflective of stock status (a negative impact). For example, restrictive measures can be required under high biomass when high availability, especially when combined with high effort, leads to high harvest and therefore the need to use restrictive measures to prevent overfishing. Alternatively, low biomass and low availability can lead to low harvest, which can allow comparatively liberal measures to remain in place without risking overfishing.

Under Alternative 1A, measures can change as frequently as every year if needed. Annual changes in measures can ensure that measures are reflective of changing conditions based on the best available data. This should contribute to the goal of preventing overfishing on an annual basis and maintaining fishing opportunities in the future (a positive socioeconomic impact). However, frequent changes in measures can decrease angler satisfaction, pose challenges for planning for-hire trips, and can increase non-compliance due to confusion regarding the measures (negative socioeconomic impacts).
For these reasons, Alternative 1A is expected to have both moderate positive and moderate negative socioeconomic impacts.

## Alternative $1 B$

Alternative 1B could result in greater acceptance of the need to change measures (a positive impact) by more explicitly accounting for stock status and uncertainty in the recreational data compared to the process used under the current FMP requirements (Alternative 1A, see previous section). In addition, Alternative 1B would set measures for two years at a time, with changes in interim years only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. This could provide some degree of stability in measures, which would generally be considered a positive socioeconomic impact.
As described in more detail in Section 5.1.2, in some circumstances, Alternative 1B could result in measures that are more or less restrictive than they would otherwise need to be to allow the recreational fishery to meet but not exceed the RHL. When measures are more restrictive than
necessary to prevent RHL overages, this would result in foregone fishing opportunities (a negative socioeconomic impact). When measures are more liberal than necessary to prevent RHL overages, this could increase the likelihood of exceeding the ACL and triggering AMs in future years (a negative socioeconomic impact).
For these reasons, Alternative 1B is expected to have both moderate positive and moderate negative socioeconomic impacts.

## Alternative 1C

Similar to Alternative 1B, Alternative 1C could result in greater acceptance of the need to change measures (a positive socioeconomic impact) by explicitly accounting for multiple stock status and fishery performance metrics when determining if measures should change.
Under Alternative 1C, there are only four possible management outcomes (four bins) across the entire range of possible stock status and fishery conditions. Therefore, the same measures would remain in place over a wide range of conditions. In some cases, this would result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions. In those cases, this would result in foregone fishing opportunities and negative socioeconomic impacts due to reduced angler satisfaction, reduced catches on for-hire trips, reduced demand for for-hire trips, reduced revenues for for-hire captains and crew, as well as negative impacts to recreational support businesses such as bait and tackle shops. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts (higher angler satisfaction, higher for-hire revenues, etc.). However, measures that are too liberal for current conditions can result in catch that is too high and could risk exceeding the ACL and triggering an AM. Triggering an AM could require more restrictive measures in future years to correct or mitigate for the impacts of the past overages and to prevent future overages. This would result in negative socioeconomic impacts (less angler satisfaction, fewer for-hire trips, etc.) in years when AMs are implemented.

Stability in measures would generally be considered a positive socioeconomic impact unless the measures are perceived to be overly restrictive. However, as only four sets of measures would be used to cover the entire range of possible fishery and stock status conditions, measures may change more drastically when changes are needed under this alternative compared to all other alternatives. This would be considered a generally negative socioeconomic impact, especially when measures are made more restrictive.

For these reasons, Alternative 1C is expected to have both moderate positive and moderate negative socioeconomic impacts.

## Alternative $1 D$

Alternative 1D requires explicit consideration of a greater number of stock status and fishery performance indicators than all other alternatives except Alternative 1C. Alternative 1C considers similar indicators as this alternative, but the management response under Alternative 1 C is less finely tuned to changing conditions. To the extent that these considerations result in a perception that measures are reflective of stock status, potentially leading to greater acceptance of the measures and the need to change measures, this could be considered a positive socioeconomic impact.

As with the other binned approaches (i.e., Alternatives 1C and 1E), Alternative 1D would leave the same measures in place over a range of conditions; however, the range would be narrower than under the other binned approaches. As such, measures may change more frequently (a negative socioeconomic impact), but they may be more reflective of changing conditions (a positive impact) than the other binned approaches.

As with Alternative 1C, leaving measures unchanged over a range of conditions could result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions. In those cases, this would result in foregone fishing opportunities and negative socioeconomic impacts. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts. However, measures that are too liberal for current conditions can result in the need for more restrictive measures in future years (e.g., by causing the stock to drop to a more restrictive bin), which would result in negative socioeconomic impacts in future years.
For these reasons, Alternative 1D is expected to have both moderate positive and moderate negative socioeconomic impacts.

## Alternative $1 E$

Similar to Alternatives 1B-1D, Alternative 1E could result in greater acceptance of the need to change measures by explicitly accounting for biomass and biomass trend when determining if measures should change. This could be considered a positive socioeconomic impact. However, the measures may be perceived as less closely tied to stock status and recent fishery conditions than Alternatives 1C and 1D as those alternatives consider a greater number of stock status and fishery indicators.

Under Alternative 1E, there are only six possible management outcomes (six bins) across the entire range of possible stock status and fishery conditions. Therefore, the same measures would remain in place over a wide range of conditions. In some cases, this would result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions and if additional metrics beyond biomass and biomass trend were considered (e.g., $\left.\mathrm{F} / \mathrm{F}_{\mathrm{MSY}}\right)$. In those cases, this would result in negative socioeconomic impacts. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts. However, measures that are too liberal for current conditions can result in catch that is too high and could risk exceeding the ACL and triggering an AM. Triggering of AMs could require more restrictive measures in future years to correct or mitigate for the impacts of the past overages and to prevent future overages. This would result in negative socioeconomic impacts in years when AMs are implemented.

Stability in measures would generally be considered a positive socioeconomic impact unless the measures are perceived to be overly restrictive. However, as only six sets of measures would be used under Alternative 1E to cover the entire range of possible fishery and stock status conditions, measures may change more drastically when changes are needed under this alternative compared to all other alternatives except for Alternative 1C, which uses four bins. This would be considered a generally negative socioeconomic impact, especially when measures are made more restrictive.

For these reasons, Alternative 1E is expected to have both moderate positive and moderate negative socioeconomic impacts.

## Impacts of Alternative Set 1 on Summer Flounder, Scup, Black Sea Bass, and Bluefish

Alternative 1 A
The primary goal of recreational measures under Alternative 1A is to allow harvest to meet but not exceed the RHL. The RHL is derived from the most recent peer reviewed and accepted stock assessment and accounts for scientific uncertainty, the Council's ABC control rule (which defines the acceptable risk of overfishing based on biomass compared to the target level), commercial/recreational allocations, and assumptions about recreational dead discards in future years. The RHL can also account for management uncertainty deductions. For all these reasons, the RHL is based on the best scientific information available and is intended to prevent overfishing. Therefore, by setting measures with the goal of allowing harvest to meet but not exceed the RHL, Alternative 1A is expected to have moderate positive impacts on summer flounder, scup, and black sea bass by preventing overfishing, maintaining biomass at or above the target level (for scup and black sea bass; see Sections 6.2.2 and 6.2.3), or increasing biomass to the target level over time (for summer flounder; see Section 6.2.1).

The bluefish stock is currently overfished, but overfishing is not occurring (Section 6.2.4). The stock is under a rebuilding plan, which aims to bring the stock to the target biomass level over time. Under the current rebuilding plan, the stock is expected to remain overfished through 2023. As such, the RHL set under the current process (represented by Alternative 1A) is expected to have short term slight negative impacts for bluefish as the stock is expected to remain in an overfished condition through 2023. However, slight positive impacts are expected over the long term as the RHL is set based on the rebuilding plan which aims to improve stock status over time.

## Alternative 1B

All combinations of sub-alternatives under Alternative 1B would allow for some level of RHL overages in some circumstances. RHL overages carry a risk of ACL overages, which in turn risk ABC and OFL overages and therefore risk resulting in overfishing. Therefore, this alternative cannot be demonstrated to proactively prevent overfishing every year in all circumstances. The RHL accounts for the best available scientific information on stock status. Therefore, even at high biomass levels, RHL overages can result in overfishing
ACL overages under Alternative 1B would still trigger an AM response. AMs could require a change in measures with the goal of correcting or mitigating for the impacts of ACL overages and preventing future overages. In addition, this alternative is structured such that the management response would be more conservative when biomass is below the target level compared to when it is at or above the target level. If stock status is negatively impacted by RHL overages to the extent that biomass falls to a lower category, a more conservative approach would be used which could contribute to an increasing biomass over time.
Alternative 1B is expected to have negative impacts on the stock status of summer flounder, scup, black sea bass, and bluefish (if used in the future when the stock is no longer under a rebuilding plan) when RHL overages occur. However, these impacts are expected to be slight negative given AMs would aim to correct and mitigate negative impacts of ACL overages after they occur.
It is also worth noting that all combinations of sub-alternatives under Alternative 1 B could require some level of RHL underages in some circumstances. This would result in measures that
are more restrictive than necessary to allow harvest to meet but not exceed the RHL. Any alternatives that prevent RHL overages would contribute to prevention of ACL, ABC, and OFL overages, and therefore would be expected to have moderate positive impacts on the stocks by preventing overfishing, maintaining biomass at or above the target level, or increasing biomass to the target level over time. In these circumstances, Alternative 1B would be expected to have moderate positive impacts on the stocks.

In summary, the impacts of Alternative 1B on summer flounder, scup, black sea bass, and bluefish are expected to range from slight negative to moderate positive depending on the specific outcome in any given specifications cycle.

## Alternatives 1C-1E

As described in more detail in Sections 7.2.1.3-7.2.1.5, Alternatives 1C-1E (the binned approaches) are expected to have slight negative to moderate positive impacts on the summer flounder, scup, black sea bass, and bluefish stocks for similar reasons, though the magnitude of these impacts may vary. Under all three binned approaches, the same measures would remain in place over a range of stock status conditions. This may not always prevent RHL overages on an annual basis. RHL overages carry a risk of ACL overages, which in turn risk ABC and OFL overages and therefore risk resulting in overfishing (Section 4.4). Therefore, this alternative cannot be demonstrated to proactively prevent overfishing every year in all circumstances. The RHL accounts for the best available scientific information on stock status. Therefore, even at high biomass levels, RHL overages can result in overfishing.

However, negative stock status trends can trigger the use of more restrictive measures (e.g., through AMs or movement to a more restrictive bin). In addition, measures for all bins can be regularly reviewed and revised as necessary to ensure they are appropriately set. Therefore, any negative impacts to stock status may be temporary in nature as this approach could still contribute to increasing biomass to the target level and maintaining biomass at or above the target level over the long term.

Therefore, depending on the specific outcome in any given specifications cycle, the impacts of Alternatives $1 \mathrm{C}-1 \mathrm{E}$ on summer flounder, scup, black sea bass, and bluefish are expected to range from slight negative (if overfishing is not prevented on an annual basis) to moderate positive (when overfishing does not occur and when more restrictive measures contribute to positive stock status over the long term).

## Impacts of Alternative Set 1 on Non-Target Species, Habitat, and Protected Species

Alternative Set 1 defines the process for setting measures, but does not implement specific measures. Fishing effort, and the spatial and seasonal distribution of that effort, will be impacted by the measures (and other factors), but is not directly impacted by the process used to set the measures. For these reasons and as described in more detail in Sections 7.3-7.5, Alternative Set 1 is expected to have no impact on non-target species, habitat, or protected species as it simply defines the process for setting recreational measures and therefore is largely administrative in nature in regard to impacts on non-target species, habitat, and protected species. The impacts of specific measures implemented through the process defined by these alternatives will be analyzed in separate future specifications documents.

### 1.3.2 Impacts of Alternative Set 2: Target Metric for Setting Measures Under Alternatives 1C-1E

## Socioeconomic Impacts of Alternative Set 2

Alternative Set 2 considers whether the measures assigned to each bin in Alternatives 1C-1E would aim to achieve a target level of recreational harvest (Alternative 2A), recreational catch (Alternative 2B), or recreational fishing mortality (Alternative 2C) that is appropriate for the stock conditions associated with that bin. The target metric is intended to reflect current stock conditions; therefore, all three alternatives should have moderate positive socioeconomic impacts by contributing to the prevention of overfishing, maintaining biomass above the target level, or building biomass towards the target over time and, therefore, maintaining fishing opportunities.

## Impacts of Alternative Set 2 on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As described above, the target metric defined through Alternative Set 2 is intended to reflect stock conditions. Therefore, all three alternatives in Alternative Set 2 should have moderate positive impacts on the summer flounder, scup, and black sea bass stocks by contributing to the prevention of overfishing, maintaining biomass above the target level, or building biomass towards the target over time.

These alternatives may not be used for stocks under a rebuilding plan; therefore, they are not relevant for bluefish until that stock is no longer in a rebuilding plan. If these alternatives are used for bluefish in the future when the stock is no longer in a rebuilding plan, they would be expected to have the same impacts as for the other species (i.e., moderate positive).

## Impacts of Alternative Set 2 on Non-Target Species, Habitat, and Protected Species

Like Alternative Set 1, Alternative Set 2 defines the process for setting measures, but does not implement specific measures. Fishing effort, and the spatial and seasonal distribution of that effort, will be impacted by the measures (and other factors), but is not directly impacted by the process used to set those measures. For these reasons and as described in more detail in Sections 7.3-7.5, Alternative Set 2 is expected to have no impacts on non-target species, habitat, or protected species as it simply defines the process for setting recreational measures and therefore is largely administrative in nature in regard to impacts on non-target species, habitat, and protected species. The impacts of specific measures implemented through the process defined by these alternatives will be analyzed in separate future specifications documents.

### 1.3.3 Impacts of Alternative Set 3: Conservation Equivalency

## Socioeconomic Impacts of Alternative Set 3

Alternative 3A would allow for measures that are tailored to the unique characteristics of the fisheries in each state while still ensuring that harvest, catch, or fishing mortality (depending on the alternatives selected from Alternative Sets 1 and 2) is constrained to appropriate levels. Therefore, this alternative is expected to have moderate positive socioeconomic impacts.

Under Alternative 3B, regional groupings of states could submit proposals for alternative recreational measures which are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality as the measures that would otherwise be implemented. States would have limited flexibility to deviate from other states within the same region. This could lead to greater consistency in measures across states, including in states with shared or adjacent fishing areas. For these reasons, this alternative is expected to have moderate positive socioeconomic impacts.

Under Alternative 3C, conservation equivalency under the Commission process would not be permitted for any of the four species on a state or regional level. This would reduce the flexibility afforded to states/regions compared to the previous two alternatives. This could be considered a negative socioeconomic impact; however, it is important to note that states play a role in determining the measures that are implemented in every specifications cycle. This alternative would only limit the ability of states/regionals from proposing different measures than those agreed to earlier in the specifications process. In addition, disallowing conservation equivalency would improve the efficiency and predictability of the specifications process. For these reasons, this alternative is expected to have slight negative socioeconomic impacts.

## Impacts of Alternative Set 3 on Summer Flounder, Scup, Black Sea Bass, Bluefish, NonTarget Species, Habitat, and Protected Species

Across all three alternatives in Alternative Set 3, measures must have the same expected impact on the target stocks (e.g., the same expected harvest). These alternatives only define the degree of flexibility that states have in proposing alternative measures and therefore are expected to have no impacts on summer flounder, scup, black sea bass, bluefish, non-target species, habitat, or protected species as they are administrative in nature.

### 1.3.4 Impacts of Alternative Set 4: Accountability Measures Under Alternatives 1B, 1C-1, and $1 \mathrm{E}-1$

## Socioeconomic Impacts of Alternative Set 4

Alternatives 4A and 4B consider only the metrics used for determining the magnitude of the AM response in specific circumstances. They do not impact the determination of whether an AM was triggered. It is not possible to predict if either Alternative 4A or 4B would result in more frequent use of a stricter AM response as this may vary on a case-by-case basis. As described in more detail in Section 7.1.4, Alternatives 4A and 4B could have both slight negative and slight positive socioeconomic impacts, depending on the outcome on case-by-case basis.

## Impacts of Alternative Set 4 on Summer Flounder, Scup, Black Sea Bass, and Bluefish

Under both Alternatives 4A and 4B, AMs would be used to mitigate the impacts of ACL overages when they occur. In this sense, both alternatives should contribute to either maintaining a positive stock status or rebuilding towards a positive stock status for all four species over the long term. Therefore, both Alternatives 4A and 4B are expected to have moderate positive impacts for all four species.

## Impacts of Alternative Set 4 on Non-Target Species, Habitat, and Protected Species

Both Alternatives 4A and 4B could result in reduced fishing effort in years when AMs are implemented. A reduction in fishing effort could reduce impacts to non-target species, habitat, and protected species. However, these alternatives consider only the metrics used for determining the magnitude of the AM response in specific circumstances. Alternatives 4A and 4 B are only relevant when an AM is triggered and a response is needed. It is not possible to predict differences in the magnitude of AM responses, and therefore of changes in fishing effort, under these two alternatives as this could vary on a case-by-case basis. Therefore, these alternatives are expected to have no impacts on non-target species, habitat, or protected species as they are administrative in nature.

Table 2. Summary of expected socioeconomic impacts of the alternatives and expected impacts on summer flounder, scup, and black sea bass, based on the rationale described in more detail in Sections 7.1 and 7.2. As described in Sections 7.3-7.5 none of the alternatives are expected to impact non-target species, habitat, or protected species.

| Alternative | Expected socioeconomic impacts | Expected impacts to summer <br> flounder, scup, black sea bass | Expected impacts to bluefish |
| :---: | :---: | :---: | :---: |
| 1A: No action | Moderate negative and moderate positive | Moderate positive | Slight negative to slight positive ${ }^{1}$ |
| 1B: Percent change approach (preferred with 3-year sunset) | Moderate negative and moderate positive | Slight negative to moderate positive | Not applicable while under rebuilding plan; slight negative to moderate positive once not under a rebuilding plan |
| 1C: Fishery score approach | Moderate negative and moderate positive | Slight negative to moderate positive |  |
| 1D: Biological reference point approach | Moderate negative and moderate positive | Slight negative to moderate positive |  |
| 1E: Biomass based matrix approach | Moderate negative and moderate positive | Slight negative to moderate positive |  |
| 2A: Rec. harvest target | Moderate positive | Moderate positive | Not applicable while under rebuilding plan; moderate positive once not under a rebuilding plan |
| 2B: Rec. catch target | Moderate positive | Moderate positive |  |
| 2C: Rec. fishing mortality target | Moderate positive | Moderate positive |  |
| 3A: No action on ASMFC conservation equivalency (preferred) | Moderate positive | No impact | No impact |
| 3B: Regional ASMFC conservation equivalency | Moderate positive | No impact | No impact |
| 3C: ASMFC <br> Conservation equivalency disallowed | Slight negative | No impact | No impact |
| 4A: Catch compared to ABC in AMs | Slight negative and slight positive | Moderate positive | Moderate positive |
| 4B: $\mathrm{F} / \mathrm{F}_{\mathrm{MSY}}$ in AMs (preferred) | Slight negative and slight positive | Moderate positive | Moderate positive |

### 1.3.5 Cumulative Impacts of the Alternatives

The impacts of all alternatives on human communities, target and non-target species, habitat, and protected species have been analyzed (Section 7). When the proposed action (i.e., all preferred alternatives) is considered in conjunction with all other impacts from past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative; therefore, no significant cumulative effects on the human environment are associated with the proposed action (Section 7.6).

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## 3 List of Acronyms and Abbreviations

| ABC | Acceptable biological catch limit |
| :--- | :--- |
| ACL | Annual catch limit |
| ACT | Annual catch target |
| AM | Accountability measure |
| ASMFC | Atlantic States Marine Fisheries Commission |
| B | Biomass |
| BMSY | Biomass reference point |
| CFR | Code of federal regulations |
| CI | Confidence interval |
| Commission | Atlantic States Marine Fisheries Commission |
| Council | Mid-Atlantic Fishery Management Council |
| DPS | Distinct population segment |
| EFH | Essential fish habitat |
| EO | Executive order |
| ESA | Endangered Species Act |
| F | Fishing mortality rate |
| FMAT/PDT | Fishery Management Action Team/Plan Development Team |
| FMP | Fishery Management Plan |
| FMSY | Fishing mortality reference point |
| Management Board | ASMFC species management board |
| Measures | Recreational bag, size, and season limits |
| MMPA | Marine Mammal Protection Act |
| MRIP | Marine Recreational Information Program |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| NEFSC | Northeast Fisheries Science Center |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| OFL | Overfishing limit |
| PBR | Potential biological removal |
| Policy Board | ASMFC interstate fishery management program policy board |
| R | Recruitment |
| RHL | Recreational harvest limit |
| SSC | Scientific and statistical committee |
| VEC | Valued ecosystem component |
| VTR | Vessel trip report |
|  |  |

## 4 Background and Purpose of Management Action

This management action was developed by the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission). The Council and the Commission's Interstate Fishery Management Program Policy Board (Policy Board) considered an identical set of management alternatives and selected the same preferred alternatives for implementation. For the Commission, this process took place through Addendum XXXIV to their Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP) and Addendum II to their Bluefish FMP. ${ }^{2}$

The Council and Commission work cooperatively to develop commercial and recreational fishery regulations for summer flounder, scup, black sea bass, and bluefish. The National Marine Fisheries Service (NMFS) serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch for all four species is taken from both state ( $0-3$ miles offshore) and federal waters (3-200 miles offshore).
The management units are Maine through North Carolina for summer flounder, Maine through Cape Hatteras, North Carolina for scup and black sea bass, and Maine through the east coast of Florida for bluefish.

All past FMP amendments and frameworks are available at https://www.mafmc.org/sf-s-bsb and https://www.mafmc.org/bluefish. Addenda that addressed the state waters measures process and therefore did not modify the Council FMP are available at http://www.asmfc.org/species/summer-flounder, http://www.asmfc.org/species/scup, http://www.asmfc.org/species/black-sea-bass, and http://www.asmfc.org/species/bluefish.

### 4.1 History of the Recreational Reform Initiative

In recent years, the Council and Commission have faced several challenges when setting recreational management measures (i.e., recreational bag, size, and season limits) for summer flounder, scup, black sea bass, and bluefish, including concerns related to uncertainty and variability in the recreational fishery data provided by the Marine Recreational Information Program (MRIP), the need to change measures (sometimes annually) based on those data, as well as the perception that measures are not reflective of stock status. In addition, management measures have not always had their intended effect on overall harvest.
The Council and Commission had been considering improvements to the management process for these recreational fisheries for several years before initiating the Recreational Harvest Control Rule Framework/Addenda. For example, in 2015 the Council and Commission considered initiating an amendment to address a variety of commercial and recreational management issues for black sea bass. However, little progress was made due to competing priorities, including development of other actions that addressed some issues which may have been included in the amendment. In 2018, the Commission's Summer Flounder, Scup, and Black Sea Bass Management Board (Management Board) Chair and Vice Chair put forward a draft

[^1]strategic plan for addressing several black sea bass management challenges. ${ }^{3}$ In December 2018, the Council and Board agreed to form a working group to further develop and analyze potential approaches for improving stability in recreational management measures from year to year. This group was formed in the spring of 2019 and met several times to provide advice to the Council and Board on potential priority management actions. Ultimately these considerations were broadened in scope to address all four jointly managed recreational species and were collectively referred to as the Recreational Reform Initiative.

In October 2020, the Council and the Policy Board initiated two management actions (a framework/addenda and an amendment) to address several recreational issues for all four species. In December 2020, staff recommended addressing some topics through a technical guidance document, rather than a framework/addendum or amendment. The full list of prioritized topics grouped by management action is shown in Table 3. In February 2021, the Council and Policy Board agreed to prioritize the Recreational Harvest Control Rule Framework/Addenda before developing the remaining topics. A Fishery Management Action Team (FMAT)/Plan Development Team (PDT) was formed to assist with development of alternatives for this action. A full list of FMAT/PDT, Council/Policy Board, Advisory Panel, and public hearing meetings on this action is included in Section 8.5. Meeting summaries and briefing materials, where available, are posted on the Council and Commission's websites (https://www.mafmc.org/ and http://asmfc.org/).
The remaining Recreational Reform Initiative topics (Table 3) remain a priority for the Council and Commission and may be further developed starting in 2023.

Table 3: Topics to be considered through management actions initiated by the Council and Policy Board in October 2020. To date, only the Recreational Harvest Control Rule has been developed through this Framework/Addenda. The remaining topics will be considered through separate, future management actions and guidance document development.

| Technical Guidance Document | Framework/Addenda | Amendment |
| :---: | :---: | :---: |
| - Process for identifying and smoothing outlier MRIP estimates. <br> - Evaluate the pros and cons of using preliminary current year MRIP data. <br> - Develop guidelines for maintaining status quo measures. | - Envelope of uncertainty approach for determining if changes to recreational management measures are needed. <br> - Develop process for setting multi-year recreational management measures. <br> - Consider changes to the timing of recommending federal waters measures. <br> - Recreational Harvest Control Rule. | - Recreational sector separation. <br> - Recreational catch accounting. |

### 4.2 NEPA Purpose and Need

The purpose of this action is to consider modifications to the process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish. This action is

[^2]needed to ensure that measures aim to prevent overfishing, are reflective of stock status, appropriately account for uncertainty in the recreational data, take into consideration angler preferences, and provide an appropriate level of stability and predictability in changes from year to year.
This EA is being prepared using the 2020 Council on Environmental Quality NEPA Regulations. The effective date of these regulations was September 14, 2020 and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute ( 85 Fed. Reg. at 43372-73 §§ 1506.13, 1507.3(a)). The management action associated with this EA was initiated in October 2020 and accordingly proceeds under the 2020 regulations.

### 4.3 FMP Goals and Objectives

The goals and objectives as defined in the FMPs for each species are listed below.

### 4.3.1 Summer Flounder FMP Goals and Objectives

The summer flounder FMP objectives were revised via Amendment 21 (2020). The revised goals and objectives for summer flounder are as follows:
Goal 1: Ensure the biological sustainability of the summer flounder resource in order to maintain a sustainable summer flounder fishery.

Objective 1.1: Prevent overfishing, and achieve and maintain sustainable spawning stock biomass levels that promote optimum yield in the fishery.
Goal 2: Support and enhance the development and implementation of effective management measures.

Objective 2.1: Maintain and enhance effective partnership and coordination among the Council, Commission, Federal partners, and member states.

Objective 2.2: Promote understanding, compliance, and the effective enforcement of regulations.
Objective 2.3: Promote monitoring, data collection, and the development of ecosystembased science that support and enhance effective management of the summer flounder resource.

Goal 3: Optimize economic and social benefits from the utilization of the summer flounder resource, balancing the needs and priorities of different user groups to achieve the greatest overall benefit to the nation.

Objective 3.1: Provide reasonable access to the fishery throughout the management unit. Fishery allocations and other management measures should balance responsiveness to changing social, economic, and ecological conditions with historic and current importance to various user groups and communities.

### 4.3.2 Scup and Black Sea Bass FMP Objectives

The FMP objectives for scup and black sea bass were adopted via the amendments that added these species to the FMP (Amendment 8 for scup and Amendment 9 for black sea bass) and have not been modified since that time. The current FMP objectives for scup and black sea bass are:

1. Reduce fishing mortality in the scup and black sea bass fisheries to assure that overfishing does not occur.
2. Reduce fishing mortality on immature scup and black sea bass to increase spawning stock biomass.
3. Improve the yield from these fisheries.
4. Promote compatible management regulations between state and federal jurisdictions.
5. Promote uniform and effective enforcement of regulations.
6. Minimize regulations to achieve the management objectives stated above.

### 4.3.3 Bluefish FMP Goals and Objectives

The bluefish FMP objectives were revised via Amendment 7 (2021). The revised goals and objectives are as follows:

Goal 1: Conserve the bluefish resource through stakeholder engagement to maintain sustainable recreational fishing and commercial harvest.

Objective 1.1: Achieve and maintain a sustainable spawning stock biomass and rate of fishing mortality.

Objective 1.2: Promote practices that reduce release mortality within the recreational and commercial fishery.

Objective 1.3: Maintain effective coordination between the National Marine Fisheries Service, Council, Commission, and member states by promoting compliance and to support the development and implementation of management measures.
Objective 1.4: Promote compliance and effective enforcement of regulations.
Objective 1.5: Promote science, monitoring, and data collection that support and enhance effective ecosystem-based management of the bluefish resource.

Goal 2: Provide fair and equitable access to the fishery across all user groups throughout the management unit.

Objective 2.1: Ensure the implementation of management measures provides fair and equitable access to the resource across all user groups within the management unit.
Objective 2.2: Consider the economic and social needs and priorities of all groups that access the bluefish resource in the development of new management measures.
Objective 2.3: Maintain effective coordination with stakeholder groups to ensure optimization of economic and social benefits.

### 4.4 The Specifications Process

The Council and the relevant Commission species management board jointly agree to annual commercial and recreational catch and landings limits, as well as other management measures such as minimum fish sizes, gear restrictions, and possession limits through a process referred to as "specifications." The FMP specifies which measures may be modified through the specifications process as opposed to an FMP framework or amendment. The specifications process allows for annual review, and modification if necessary, of catch and landings limits and other measures.

This section briefly summarizes the aspects of the specifications process which are most relevant to this action and would remain unchanged under all alternatives considered through this action.

As a first step in establishing the annual catch and landings limits, the Council's Scientific and Statistical Committee (SSC) recommends acceptable biological catch limits (ABCs) based on the Council's ABC control rule and risk policy. When possible, the ABC is derived from an overfishing limit (OFL) which is projected based on a peer reviewed and accepted stock assessment model (this has been the case for all four species since the 2016 black sea bass research track assessment was peer reviewed and approved for use in management). The ABC is set less than the OFL to account for scientific uncertainty. The catch and landings limits recommended by the Council cannot exceed the ABC recommended by the SSC.
For all four species, commercial and recreational Annual Catch Limits (ACLs) are derived from the ABCs based on the commercial/recreational allocation percentages defined in the FMPs. Sector-specific Annual Catch Targets (ACTs) are set less than or equal to the ACLs to account for management uncertainty. The OFL, ABC, ACLs, and ACTs are catch limits, meaning they account for landings and dead discards. A commercial quota and RHL are derived from the commercial and recreational ACTs by subtracting expected dead discards.

### 4.5 Recreational Accountability Measures

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires Council FMPs to contain ACLs and "measures to ensure accountability." The National Standards Guidelines state that AMs "are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages and correct the problems that caused the overage in as short a time as possible." (50 CFR $600.310(\mathrm{~g})$ ).
Under the current process, proactive AMs include adjustments to the management measures for the upcoming fishing year, if necessary, to prevent the RHL and ACL from being exceeded. Measures to prevent the RHL from being exceeded are ultimately intended to also prevent ACL overages, which in turn prevents overfishing.

Given the timing of MRIP data availability, the regulations do not allow for in-season closure of the recreational fishery if the RHL or ACL is expected to be exceeded. Therefore, under the current process, measures must be set in a manner that is reasonably expected to constrain harvest to the RHL. None of the alternatives in this action considered changes to the recreational in-season closure authority as none of the alternatives would change the timing of availability of data to inform in-season closures.

The current recreational AMs for these species were implemented through an omnibus amendment in 2013 (Amendment 19 to the Summer Flounder, Scup, and Black Sea Bass FMP and Amendment 4 to the Bluefish FMP). ${ }^{4}$ The AMs are included in the Council's FMP. They are not included in the Commission's FMP; however, the Council and Policy Board both considered changes to this aspect of the management program and they both selected the same preferred alternative, as described in Section 5. The current recreational AMs are described in more detail in Section 5.1.

[^3]No changes were considered to the commercial accountability measures through this action.

## 5 Management Alternatives

The Council and Policy Board considered four sets of alternatives through this action. Alternative Set 1 (Section 5.1) defines the process used to set recreational bag, size, and season limits for all four species. Alternative Set 2 (Section 5.2) defines the target metric for setting measures under Alternatives 1C-1E. Alternative Set 3 (Section 5.3) includes alternatives regarding the Commission's conservation equivalency process. Alternative Set 4 (Section 5.4) includes alternatives related to one minor component of the recreational AMs under some alternatives in Alternative Set 1. All alternatives are described in more detail in the following sections.

None of the alternatives would implement specific bag, size, or season limits. Those measures would be established and modified through separate specifications actions. None of the alternatives would modify the aspects of the specifications process described in Section 4.4. Specifically, none of the alternatives would modify the process for setting OFLs, ABCs, commercial and recreational ACLs, commercial quotas, and RHLs for these four species. In addition, none of the alternatives would modify any aspects of commercial management.

Under all alternatives, stocks under an approved rebuilding plan would be subject to the measures of that rebuilding plan. None of the alternatives would replace rebuilding plan measures. The rebuilding plan may require a different process than the alternatives described below. In some instances, measures implemented through the alternatives below may be used as temporary measures until a rebuilding plan is implemented, which can take up to two years after the stock is declared overfished.

### 5.1 Alternative Set 1: Process for Setting Recreational Measures

Alternative Set 1 includes five alternatives to define the process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish. Key considerations regarding the differences in these alternatives are summarized in Table 4.

Alternatives 1A-1E are mutually exclusive. Some alternatives include sub-alternatives. In addition, as described below, alternatives $1 \mathrm{C}-1 \mathrm{E}$ require selection of one alternative from Alternative Set 2 (Section 5.2). Alternative Set 2 is not relevant for Alternatives 1A or 1B. Any of the alternatives in Alternative Set 3 (conservation equivalency; Section 5.3) could be used in combination with any of the alternatives in Alternative Set 1. As described below, Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$ require selection of one alternative from Alternative Set 4 (Section 5.4). Alternative Set 4 is not relevant for other Alternative $1 \mathrm{~A}, 1 \mathrm{C}-2,1 \mathrm{D}$, or $1 \mathrm{E}-2$.

Table 4: Information used to determine when a change in measures is needed under Alternatives $1 \mathrm{~A}-1 \mathrm{E}$ as well as number of pre-defined sets of measures (i.e., measure bins). Dark shades of blue indicate a comparatively high impact on the resulting measures and lighter shades represent a lower impact.

| Alternative | Information triggering a change in measures |  |  |  | \# of pre- |  |
| :---: | :---: | :--- | :--- | :--- | :--- | :---: |
|  | Expected |  |  |  |  |  |
| 1A: No action | Primary | F/FMSY | Recruitment | Biomass <br> trend <br> measure <br> sets |  |
| 1B: Percent <br> change | Primary | Primary |  |  | Measures <br> are not pre- <br> defined |  |
| 1C: Fishery <br> score | Primary | Primary | Primary | Primary |  | Measures <br> are not pre- <br> defined |
| 1D: Biological <br> reference point | Only when <br> F>F | Primary | Primary | Secondary | Secondary | 13 |
| 1E: Biomass <br> based matrix |  | Primary |  |  | Primary | 6 |

### 5.1.1 Alternative 1A: No Action (Current FMP Requirements)

Alternative 1 A is the no action alternative. Under this alternative, measures would be set following the current FMP requirements. A key element of this alternative is that measures would be set with the primary goal of allowing harvest to meet but not exceed the RHL (see Section 4.4 for details on how the RHL is set). Specific methodologies for achieving this goal are not codified in the FMP. Examples of the process used in recent years are described in a September 2021 staff memo to the SSC, available at https://www.mafmc.org/s/RR SSC memo current process Sept2021.pdf.

As shown in Section 6.1, measures in recent years have not always successfully achieved the goal of allowing harvest for all four species to meet but not exceed the RHL. Harvest (or catch) under any set of measures is difficult to predict as it is impacted by many factors besides measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest can vary notably from year to year under the same set of measures. The Council and Commission are supporting development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. ${ }^{5}$ These improved tools could be used under all alternatives in this document, including the No Action Alternative.

[^4]Additional details regarding how state measures are set under the Commission process are outlined in the Addendum XXXII for summer flounder and black sea bass, ${ }^{6}$ Addendum XI for scup, ${ }^{7}$ and Amendment 1 for bluefish. ${ }^{8}$

The Council and Commission did not select Alternative 1A as a preferred alternative because they felt it did not address recent challenges with the current process, including challenges related to uncertainty and variability in the MRIP data, the need to change measures (sometimes annually) based on those data, and the perception that measures are not reflective of stock status.

## Current Summer Flounder, Scup, Black Sea Bass, and Bluefish AMs

As previously stated, the current recreational AMs for these species were implemented through an omnibus amendment in 2013. The current recreational AMs include a set of possible responses to exceeding the recreational ACL, depending on stock status and which limits are exceeded. Paybacks of ACL overages may be required in a subsequent fishing year, depending on stock status and the scale of the overage, as described below.

ACL overages in the summer flounder, scup, and black sea bass recreational fisheries are evaluated by comparing the most recent 3-year average recreational ACL against the most recent 3 -year average of recreational catch (i.e., landings and dead discards). If average catch exceeds the average ACL, then the appropriate AM is determined based on the following criteria:

1. If the stock is overfished ( $\mathrm{B}<1 / 2 \mathrm{~B}_{\mathrm{MSY}}$ ), under a rebuilding plan, or the stock status is unknown: The exact amount, in pounds, by which the most recent year's recreational ACL has been exceeded will be deducted in the following fishing year, or as soon as possible once catch data are available.
2. If biomass is above the threshold, but below the $\operatorname{target}\left(1 / 2 \mathrm{~B}_{\mathrm{MSY}}<\mathrm{B}<\mathrm{B}_{\mathrm{MSY}}\right)$, and the stock is not under a rebuilding plan:
a. If only the recreational ACL has been exceeded, then adjustments to the recreational management measures (bag, size, and seasonal limits) would be made in the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and conditions that precipitated the overage.
b. If the ABC is exceeded in addition to the recreational ACL , then a single year deduction will be made as a payback, scaled based on stock biomass. The calculation for the payback amount is: (overage amount) $*\left(B_{M S Y}-B\right) / 1 / 2 B_{M S Y}$.
3. If biomass is above the target $\left(\mathrm{B}>\mathrm{B}_{\mathrm{MSY}}\right)$ : Adjustments to the recreational management measures (bag, size, and seasonal limits) will be made for the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and conditions that precipitated the overage.

Reactive recreational AMs for the bluefish recreational fishery are very similar to the process described above with a few key differences. First, ACL overages are evaluated on a one year basis as opposed to a three year average. Second, if a transfer between the commercial and

[^5]recreational sectors caused the transferring sector to register an ACL overage, then instead of applying an overage payback to the transferring sector, a transfer in a subsequent year would be reduced by the amount of the ACL overage.

### 5.1.2 Alternative 1B: Percent Change Approach (Preferred With 3-Year Sunset)

Under this alternative, referred to as the Percent Change Approach, a determination would be made to either liberalize, restrict, or leave measures unchanged based on two factors:

1) Comparison of a confidence interval (CI) around an estimate of expected harvest under status quo measures (see below) to the average RHL for the upcoming two years and
2) Biomass compared to the target level, as defined by the most recent stock assessment.

These two factors also determine the appropriate degree of change, defined as a percentage change in expected harvest, as summarized in Table 5 and described below.

The Council and Policy Board agreed that the estimate of harvest under status quo measures would be defined based on the most recent two years of MRIP estimates or an alternative predictor of harvest based on a robust statistical methodology, such as a model-based approach, approved by the Monitoring and Technical Committees.

As described in the previous section, harvest (or catch) under any set of measures is difficult to predict as it is impacted by many factors besides measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest can vary notably from year to year under the same set of measures. The Council and Commission are supporting the development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. ${ }^{9}$ These improved tools could be used under all alternatives in this document, including the Percent Change Alternative.

Under this alternative, the Council and Board would consider adjusting measures in sync with the setting of catch and landings limits in response to updated stock assessment information. It is anticipated that updated stock assessments will be available every other year for all four species. In the interim year, measures would be reviewed and may be modified if new data suggest a major change in the expected impacts of those measures on the stock or the fishery.
As shown in Table 5, only one set of outcomes was considered for when the upcoming two-year average RHL falls within the bounds of the harvest estimate CI (i.e., status quo measures are not expected to result in notable RHL overages or underages. In this case, when biomass is below the target level, measures would be modified to achieve a $10 \%$ reduction in harvest. When biomass is at least the target level but no more than $150 \%$ of the target level, there would be no liberalization or reduction in expected harvest. If measures are modified through conservation equivalency, they must maintain the same level of expected harvest as the status quo measures. When biomass is more than $150 \%$ of the target level, measures would be modified to achieve a $10 \%$ liberalization in harvest.

Sub-alternatives were considered for when the average RHL is above or below the CI (i.e., notable RHL underages or overages are expected under status quo measures). These subalternatives are described below.

[^6]
### 5.1.2.1 Sub-Alternative Set 1B-1

Under the Percent Change Approach, one of the three sub-alternatives from Sub-Alternative Set 1B-1 must be selected. These three sub-alternatives are mutually exclusive.

## Sub-Alternative 1B-1A

Under this sub-alternative, when the future two-year average RHL is greater than the upper bound of the harvest estimate CI (i.e., an RHL underage is expected under status quo measures) and biomass is at least the target level, then measures would be modified to achieve a liberalization in harvest that is equal to the percent difference between the harvest estimate under status quo measures and the two-year average RHL. Put another way, measures would be modified such that harvest in the upcoming two years is expected to meet but not exceed the upcoming two-year average RHL. The outcome when biomass is below the target level would be defined by Sub-Alternative set 1B-2.

When the future two-year average RHL is less than the lower bound of the harvest estimate CI (i.e., an RHL overage is expected under status quo measures) and biomass is no higher than $150 \%$ of the target level, then measures would be modified to achieve a reduction in harvest that is equal to the percent difference between the harvest estimate under status quo measures and the two-year average RHL. Put another way, measures would be modified so that harvest in the upcoming two years is expected to meet but not exceed the upcoming two-year average RHL. The outcome when biomass is more than $150 \%$ of the target level would be defined by SubAlternative set 1B-2.

## Sub-Alternative 1B-1B

Under this sub-alternative, when the future two-year average RHL is greater than the upper bound of the harvest estimate CI (i.e., an RHL underage is expected under status quo measures) then measures would be modified to achieve a $20 \%$ liberalization in harvest when biomass is at least the target level but no higher than $150 \%$ of the target level and a $40 \%$ liberalization when biomass is more than $150 \%$ of the target level. The outcome when biomass is below the target level would be defined by Sub-Alternative set 1B-2.

When the future two-year average RHL is less than the upper bound of the harvest estimate CI (i.e., an RHL overage is expected under status quo measures) then measures would be modified to achieve a $20 \%$ reduction in harvest when biomass is at least the target level but no higher than $150 \%$ of the target level and a $40 \%$ reduction when biomass is below the target level. The outcome when biomass is more than $150 \%$ of the target level would be defined by SubAlternative set 1B-2.

Depending on the magnitude of the difference between expected harvest under status quo measures and the upcoming two-year average RHL, this sub-alternative may result in RHL overages or underages because measures would aim to achieve a $20 \%$ or $40 \%$ liberalization or reduction (depending on the CI comparison and biomass level), regardless of the magnitude of the difference between expected harvest and the RHL.

## Sub-Alternative 1B-1C (Preferred)

Under this sub-alternative, when the future two-year average RHL is greater than the upper bound of the harvest estimate CI (i.e., an RHL underage is expected under status quo measures), measures would be modified to achieve a liberalization in harvest that is equal to the percent difference between the harvest estimate under status quo measures and the two-year average

RHL, but not to exceed $20 \%$ when biomass is at least the target level but no higher than $150 \%$ of the target level and not to exceed $40 \%$ when biomass is greater than $150 \%$ of the target level. The outcome when biomass is below the target level would be defined by Sub-Alternative set 1B-2.

When the future two-year average RHL is less than the lower bound of the harvest estimate CI (i.e., an RHL overage is expected under status quo measures), measures would be modified to achieve a reduction in harvest that is equal to the percent difference between the harvest estimate under status quo measures and the two-year average RHL, but not to exceed $20 \%$ when biomass is at least the target level but no higher than $150 \%$ of the target level and not to exceed $40 \%$ when biomass is below the target level. The outcome when biomass is more than $150 \%$ of the target level would be defined by Sub-Alternative set 1B-2.

This sub-alternative is intended to be a hybrid of Sub-Alternatives 1B-1A and 1B-1B.
Depending on the magnitude of the difference between expected harvest under status quo measures and the upcoming two-year average RHL, this sub-alternative may result in RHL overages or underages because measures would aim to achieve liberalizations or reductions that are capped at $20 \%$ or $40 \%$ (depending on the CI comparison and biomass level), regardless of the magnitude of the difference between expected harvest and the RHL.

### 5.1.2.2 Sub-Alternative Set 1B-2

Under the Percent Change Approach, one of the two sub-alternatives from Sub-Alternative Set 1B-2 must be selected. These two sub-alternatives are mutually exclusive.

## Sub-Alternative 1B-2A (Preferred)

Under this sub-alternative, when the future two-year average RHL is greater than the upper bound of the harvest estimate CI (i.e., an RHL underage is expected under status quo measures) and biomass is below the target level, measures would be modified to achieve a $10 \%$ liberalization in harvest. The outcome when biomass is at least the target level would be defined by Sub-Alternative set 1B-1.

When the future two-year average RHL is less than the lower bound of the harvest estimate CI (i.e., an RHL overage is expected under status quo measures) and biomass is more than $150 \%$ of the target level, measures would be modified to achieve a $10 \%$ reduction in harvest. The outcome when biomass is $150 \%$ of the target level or lower would be defined by Sub-Alternative set 1B-1.

Depending on the magnitude of the difference between expected harvest under status quo measures and the upcoming two-year average RHL, this sub-alternative may result in RHL overages or underages because measures would aim to achieve $10 \%$ liberalizations or reductions (depending on the CI comparison and biomass level), regardless of the magnitude of the difference between expected harvest and the RHL.

## Sub-Alternative 1B-2B

Under this sub-alternative, measures would aim to achieve status quo levels of harvest (i.e., no liberalizations or reductions) in the following two scenarios: 1) the future two-year average RHL is greater than the upper bound of the harvest estimate CI (i.e., an RHL underage is expected under status quo measures) and biomass is below the target level and 2) the future two-year average RHL is less than the lower bound of the harvest estimate CI (i.e., an RHL overage is
expected under status quo measures) and biomass is more than $150 \%$ of the target level. This would be expected to result in RHL underages in the first scenario and RHL overages in the second scenario.

The rationale behind this alternative is that when biomass is below the target level, RHL underages can help bring the biomass up to the target level at a faster pace than if measures aimed to allow harvest to meet but not exceed the RHL. The rationale for allowing RHL overages when biomass is more than $150 \%$ of the target level is that these overages may not have an overly detrimental impact on the stock considering that biomass is very high and that restrictions would be implemented in future years if the overages result in biomass falling below $150 \%$ of the target, thus potentially preventing the stock from falling below the target level in the long-term.

Table 5: Process for determining appropriate percent change in expected harvest when developing measures under the Percent Change Approach.

| Future RHL vs Harvest Estimate | Biomass Compared to Target Level ${ }^{10}$ | Change in Harvest |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Future 2-year average RHL greater than upper bound of harvest estimate CI (harvest expected to be lower than RHL) | Very High (greater than $150 \%$ of target) | Sub-Alt. 1B-1A: Liberalization percent equal to difference between harvest estimate and 2year avg. RHL | Sub-Alt 1B- <br> 1B: 40\% <br> liberalization | Sub-Alt. 1B-1C (preferred): Liberalization percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed $40 \%$ |
|  | High <br> (at least the target level, but no higher than $150 \%$ of target) |  | Sub-Alt 1B- <br> 1B: 20\% <br> liberalization | Sub-Alt. 1B-1C (preferred): Liberalization percent equal to difference between harvest estimate and 2 -year avg. RHL, not to exceed $20 \%$ |
|  | Low (below target level) | Sub-Alt. 1B-2A (preferred): 10\% liberalization | Sub-Alt 1B-2B: 0\% (no liberalization or reduction) |  |
| Future 2-year average RHL within harvest estimate CI (harvest expected to be close to RHL) | Very High (greater than $150 \%$ of target) | 10\% liberalization |  |  |
|  | High <br> (at least the target level, but no higher than $150 \%$ of target) | $0 \%$ (no liberalization or reduction) |  |  |
|  | Low (below target level) | 10\% reduction |  |  |
| Future 2-year average RHL less than lower bound of harvest estimate CI (harvest expected to exceed RHL) | Very High <br> (greater than $150 \%$ of target) | Sub-Alt. 1B-2A (preferred): 10\% reduction | Sub-Alt. 1B-2B: 0\% (no liberalization or reduction) |  |
|  | High <br> (at least the target level, but no higher than $150 \%$ of target) | Sub-Alt. 1B-1A: <br> Reduction percent equal to difference between harvest estimate and 2year avg. RHL | Sub-Alt. 1 B1B: 20\% reduction | Sub-Alt. 1B-1C (preferred): Reduction percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed $20 \%$ |
|  | Low (below target level) |  | $\qquad$ | Sub-Alt. 1B-1C (preferred): Reduction percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed $40 \%$ |

[^7]
### 5.1.2.3 AMs under the Percent Change Approach

As described in Section 4.5, under the current process, proactive recreational AMs include setting recreational bag, size, and season limits that are expected to allow harvest to meet but not exceed the RHL. In doing so, this is expected to also prevent ACL overages if the discards buffer between the ACL and RHL is appropriately specified.
As described above, under many circumstances, measures under the Percent Change Approach would aim to achieve a different level of harvest than the RHL. In general, measures would aim to achieve smaller changes or no change in harvest when notable RHL overages or underages are not expected under status quo measures. Greater changes (either liberalizations or restrictions, depending on the circumstances) would be made when notable RHL overages or underages are expected under status quo measures. The magnitude of the change would depend on biomass such that when biomass is very high, greater liberalizations or lesser restrictions would be used. When biomass is low, smaller liberalizations or greater restrictions would be used. In this sense, the measures are more precautionary when biomass is low and have a higher level of risk when biomass is high; therefore, the process for setting measures can still be considered a proactive AM because stock status and the magnitude of potential RHL overages or underages are taken into consideration.

Under the Percent Change Approach, minimal changes would be needed to the current reactive AMs (Section 4.5). To allow for recreational measures to remain unchanged across the upcoming two years under the Percent Change Approach, the current reactive AMs would be modified such that when an overage payback is required, the payback could be spread evenly across two years. When a payback is applied, the percent change would be determined based on the reduced twoyear average RHL.
In addition, one of the two alternatives from Alternative Set 4 (Section 5.4) should be selected under the Percent Change Approach. These alternatives consider one aspect of the current accountability measures, as described in Section 5.4.

### 5.1.2.4 Rationale for Selecting Preferred Alternatives with Sunset Period

The Council and Policy Board Selected Alternative 1B, with Sub-Alternatives 1B-1C and 1B-2A as preferred alternatives. They agreed that these alternatives represent improvements over the current process (Alternative 1A) because they would set measures for two years at a time, include additional consideration of biomass compared to the target level when setting measures, and require explicit consideration of variability in harvest estimates.
Some Council and Policy Board members expressed concerns that these alternatives would not always proactively prevent overfishing. In addition, the SSC expressed concern that the information used to define the three biomass categories under this alternative is already incorporated into the RHL, resulting in double counting of this information, which could result in measures that are too liberal or too restrictive.

Other Council and Policy Board members expressed concerns that these alternatives are too similar to the current process and many of the same challenges would remain. Some Council and Policy Board members noted that Alternatives 1C-1E (the binned approaches) represent a greater departure from the current process; however, these were not selected as preferred alternatives given uncertainty regarding the resulting measures.

For all these reasons, the Council and Policy Board agreed that the Percent Change Approach should be used starting with the 2023 fishing year but should sunset no later than the end of 2025 with the goal of implementing a new and improved approach to managing these recreational fisheries by the beginning of 2026. The new approach will be developed through a separate future management action.

### 5.1.3 Alternative 1C: Fishery Score Approach

Alternative 1C is referred to as the Fishery Score Approach. This is one of three binned approaches considered through this action. The Fishery Score combines four metrics into one value which is used to place the stock in one of four management measure bins. The four metrics are: biomass (B) relative to the target ( $\mathrm{B}_{\mathrm{MSY}}$ ), recruitment $(\mathrm{R})$, fishing mortality $(\mathrm{F})$, and fishery performance. The scoring of these four metrics is described in more detail below.

Each metric would be assigned a weight, determined by the Technical/Monitoring Committees, to allow metrics with a stronger relationship to harvest to have a greater influence on measures while still accounting for metrics that impact harvest to a lesser extent. Additional metrics could be added and weighting schemes adjusted as more data become available, based on the recommendations of the Monitoring/ Technical Committees.

The Fishery Score would be calculated using the following formula:

## $\mathbf{B} / \mathbf{B}_{\text {MSY }} *\left(\mathbf{W}_{\mathbf{B}}\right)+\mathbf{F} / \mathbf{F}_{\text {MSY }} *\left(\mathbf{W}_{\mathbf{F}}\right)+\mathbf{R} *\left(\mathbf{W}_{\mathbf{R}}\right)+$ Fishery performance* $\left(\mathbf{W}_{\mathbf{F P}}\right)=$ Fishery Score

Where W refers to the weight of each factor. Each metric would be assigned a value of $1-5{ }^{11}$ and the weights for all metrics would sum to 1 . The resulting Fishery Score value corresponds to a predetermined bin as illustrated in Table 6.

Weights would have a minimum of 0.1 and maximum of 0.5 to prevent any one metric from being weighed too heavily in relation to the others. The Monitoring/Technical Committees could recommend changes to the weights through the specifications process based on their expert judgement and empirical methods when possible. Changes should be limited to provide stability in comparisons over time.

Measures associated with each of the four bins would aim to achieve a target level of harvest, catch, or fishing mortality, depending on the sub-alternative selected from Alternative Set 2 (Section 5.2). Although the Fishery Score would be calculated based on multiple factors, the management measures associated with each bin could be defined based on four categories of biomass. For example, the most liberal bin (Bin 1, Fishery Score of 4-5) could have measures based on a target level of harvest, catch, or fishing mortality (depending on the sub-alternative selected from Alternative Set 2; Section 5.2) which is appropriate for biomass that is double the target level. The next most liberal bin (Bin 2, Fishery Score of 3-3.99) could have measures that are appropriate for biomass at $125 \%$ of the target. The next lowest bin (Bin 3, Fishery Score of 22.99) could have measures that are appropriate for biomass at $75 \%$ of the target level. The most restrictive bin (Bin 4, Fishery Score less than 2) could have measures that are appropriate for biomass at $25 \%$ of the target level. However, as previously noted, if the stock is under a

[^8]rebuilding plan, the most restrictive Fishery Score measures may be temporary until replaced by rebuilding plan measures.
While the measures associated with each bin would be based on biomass compared to the target, placement of a year's measures within one of the four bins would be driven by multiple factors. For example, if the recruitment and fishery performance metrics have low scores, then the stock may be placed in a more restrictive bin with more restrictive measures than would occur based on biomass considerations alone. The opposite could occur if multiple metrics have high scores. In this way, the measures would be reflective of a combination of biomass relative to the target and assumed future conditions (e.g., high recruitment assumed to result in higher biomass in the future, allowing for more liberal measures).
Under this alternative, the Council and Board would consider adjusting the recreational measures in sync with the setting of catch and landings limits in response to updated assessment information. It is anticipated that updated stock assessments will be available for all four species every other year. In interim years, the Council and Board would review the catch and landings limits and the measures. As part of this review, the Fishery Score could be re-calculated with updated fishery performance data; however, updated estimates for the other Fishery Score metrics would not be available. Measures may be modified in interim years if new data suggest a major change in the expected impacts of those measures on the stock or the fishery.
This was not selected as a preferred alternative due to concerns regarding the complexity of the analysis needed to assign measures to all four bins for all species through the specifications process. Without consideration additional analysis, it was challenging to predict how the resulting measures under this alternative would compare to other alternatives.

Table 6: Fishery Score bins and the associated level of concern, stock status, and measures that are associated with each bin.

| Bin | Fishery Score | Stock Status and Fishery <br> Performance Outlook | Measures |
| :---: | :---: | :---: | :---: |
| 1 | $4-5$ | Good | Most Liberal |
| 2 | $3-3.99$ | Moderate | Liberal |
| 3 | $2-2.99$ | Poor | Restrictive |
| 4 | $1-1.99$ | Very Poor | Most Restrictive |

### 5.1.3.1 Accountability Measures Under Fishery Score Approach

The process for setting measures under the Fishery Score Approach can be considered a proactive AM. This is because more restrictive measures would be used when the combination of stock status and fishery performance metrics indicates a need for greater precautions. Measures would be more liberal when these metrics show less cause for concern.

Two sub-alternatives were considered for reactive AMs under the Fishery Score Approach, as described below.

## Sub-Alternative 1C-1: Reactive AMs Similar to Current AMs

This alternative would modify the current reactive AMs (Section 5.1.1) to reflect the use of management measure bins under the Fishery Score Approach.

This sub-alternative would maintain the three-year average ACL comparison for summer flounder, scup, and black sea bass and the single-year comparison for bluefish for determining if a reactive AM has been triggered. When a reactive AM has been triggered, the appropriate response would vary based on biomass, as described below.

1. If the stock is overfished ( $B<1 / 2 B_{M S Y}$ ), under a rebuilding plan, or the stock status is unknown: The measures associated with the most restrictive bin will be implemented. These may be temporary measures until replaced by measures required by a rebuilding plan, which can take up to two years to implement. If the stock was already in the most restrictive bin or the measures in the most restrictive bin are otherwise expected to continue to result in overages, then those measures must be modified as soon as possible following the determination of the overage such that they are reasonably expected to prevent future overages.
2. If biomass is above the threshold, but below the target ( $1 / 2 \mathrm{~B}_{\mathrm{MSY}}<\mathrm{B}<\mathrm{B}_{\mathrm{MSY}}$ ), and the stock is not under a rebuilding plan:
a. If only the recreational ACL has been exceeded, then the stock would remain in its current bin, but the measures associated with that bin and all other bins, would be re-evaluated with the goal of preventing future ACL overages.
b. If the ABC or $\mathrm{F}_{\mathrm{MSY}}$ (as determined through Alternative Set 4; Section 5.4) is exceeded in addition to the recreational ACL, and the stock has not already moved to a more restrictive bin due to a decrease in the Fishery Score, then the measures associated with the next more restrictive bin would be implemented. In addition, measures in all bins would be re-evaluated and revised as appropriate. If the stock moves to a more restrictive bin based on a decrease in the Fishery Score, then an additional AM is not needed as the negative impacts on stock status have already been accounted for in the movement to the more restrictive bin.
3. If biomass is above the target $\left(\mathrm{B}>\mathrm{B}_{\mathrm{MSY}}\right)$ : The management measures associated with each bin will be adjusted, taking into account the performance of the measures and the conditions that precipitated the overage.

## Sub-Alternative 1C-2: Reactive AMs Based on Overfishing Status

Under this sub-alternative, if overfishing is occurring ( F is greater than $\mathrm{F}_{\mathrm{MSY}}$ ), and the recreational dead catch to recreational ACL comparison (as described in Section 5.1.1) shows an overage, even if a change in bin was not triggered through re-calculation of the Fishery Score as described above, the management measures for all bins would be re-evaluated and modified as needed to appropriately constrain recreational catch and end overfishing.

### 5.1.4 Alternative 1D: Biological Reference Point Approach

Alternative 1D is referred to as the Biological Reference Point Approach. This is one of three binned approaches considered through this action. Under this alternative, the most recent levels of biomass and fishing mortality would define seven management measure bins, as illustrated in Table 7. Each bin would have a set of default measures which would be implemented the first
time the stock is placed in that bin. If a stock remains in the same bin based on updated biomass and fishing mortality information, then the default measures may remain in place, or slightly more liberal or slightly more restrictive measures may be implemented based on consideration of biomass trend, recent recruitment, and whether or not recent RHLs have been exceeded.

To define the bins shown in Table 7, fishing mortality would be defined as either overfishing ( F greater than $\mathrm{F}_{\mathrm{MSY}}$ ) or not overfishing ( F equal to or below $\mathrm{F}_{\mathrm{MSY}}$ ). Biomass would be divided into four categories: very high (at least $150 \%$ of the target level), high (at least the target level, but below $150 \%$ of the target level), low (below the target level, but at least $50 \%$ of the target level), and overfished (below $50 \%$ of the target level). Biomass trend would be grouped into two categories: 1) stable or increasing, or 2) decreasing. ${ }^{12}$ Recruitment would be defined as either high (i.e., the most recent three-year average is equal to or greater than the median value from the time series used to inform ABC projections) or low (i.e., the most recent three-year average is below the median value from the time series used to inform ABC projections). Recent harvest would be defined as either exceeding or not exceeding the RHL based on the most recent twoyear average.

When biomass is less than $50 \%$ of the target level, the stock is overfished and a rebuilding plan must be implemented. Bin 7 would include restrictive measures which may be used until a rebuilding plan is developed, which can take up to two years after the stock is declared overfished. Once the rebuilding plan is implemented, measures would be developed in accordance with the rebuilding plan and this alternative would not be used to set measures until the stock is no longer in a rebuilding plan.

Measures for Bins 1-7 would aim to achieve a target level of harvest, catch, or fishing mortality, depending on the sub-alternative selected from Alternative Set 2 (Section 5.2). Although placement in Bins 1-7 would be based on a combination of biomass and fishing mortality, the measures associated with each bin could be defined based on six categories of biomass and the target level of harvest, catch, or fishing mortality deemed appropriate for that biomass level. The following biomass levels are provided as examples during development of this action.

- Bin 1 (biomass at least $150 \%$ of the target and F equal to or below $\mathrm{F}_{\mathrm{MSY}}$ ): default measures are based on biomass that is double the target level.
- Bin 2 (biomass at least the target level but less than $150 \%$ of the target and F equal to or below $\mathrm{F}_{\text {MSY }}$ ): default measures based on biomass that is $140 \%$ of the target level.
- Bin 3 (below the target level, but at least $50 \%$ of the target level and $F$ equal to or below $\mathrm{F}_{\text {MSY }}$ ): default measures based on biomass that is $75 \%$ of the target level.
- Bin 4 (biomass greater than or equal to $150 \%$ of the target and F above $\mathrm{F}_{\mathrm{MSY}}$ ): default measures based on a biomass that is at the target level.
- Bin 5 (biomass at least the target level but less than $150 \%$ of the target and F above $\mathrm{F}_{\text {MSY }}$ ): default measures based on biomass that is at $75 \%$ of the target level.
- Bin 6 (below the target level, but at least $50 \%$ of the target level and $F$ above $F_{\text {MSY }}$ ): default measures based on biomass that is $60 \%$ of the target level.

[^9]- Bin 7 (below $50 \%$ of the target level): default measures based on biomass that is $25 \%$ of the target level, until replaced by rebuilding plan measures.

Under this option, the Council and Board would consider adjusting the measures in sync with the setting of catch and landings limits in response to updated assessment information. It is anticipated that updated stock assessments will be available for all four species every other year. Measures may be modified in interim years if new data suggest a major change in the expected impacts of those measures on the stock or the fishery.

As illustrated in Table 7, more restrictive measures are implemented when biomass is below the target level, when overfishing is occurring, when biomass is declining, when recruitment is low, and/or when recent RHLs have been exceeded. RHL overages are only considered when overfishing is occurring. Measures are not restricted based on RHL overages when overfishing is not occurring because the RHL overages did not contribute to overfishing. For all these reasons, additional reactive AMs are not needed under this alternative as they are already incorporated into the alternative itself.

This was not selected as a preferred alternative due to concerns regarding the complexity of the analysis needed to select 13 sets of measures (default and secondary) for all species through the specifications process. Without consideration additional analysis, it was challenging to predict how the resulting measures under this alternative would compare to other alternatives.

Table 7: Summary of the Biological Reference Point Approach illustrating bins of measures associated with different combinations of stock conditions. $\mathrm{B} \uparrow$ indicates stable or increasing biomass, $\mathrm{B} \downarrow$ indicates decreasing biomass, $\mathrm{R} \uparrow$ indicates high recruitment, and $\mathrm{R} \downarrow$ indicates low recruitment.


### 5.1.5 Alternative 1E: Biomass Based Matrix Approach

Alternative 1E is referred to as the Biomass Based Matrix Approach. This is one of three binned approaches considered through this action. This alternative would define six management measure bins based on biomass compared to the target level and recent trends in biomass. Biomass compared to the target level would be grouped into the same four categories as described above for Alternative 1D. Biomass trend would be defined as either increasing, stable, or decreasing. A specific method for defining these three biomass trend categories was not established. ${ }^{13}$

[^10]Measures associated with each of the six bins would aim to achieve a target level of harvest, catch, or fishing mortality, depending on the sub-alternative selected from Alternative Set 2 (Section 5.2).
Although placement in Bins 1-6 would be based on a combination of biomass level and biomass trend, the measures associated with each bin could be defined based on six categories of biomass and the target level of harvest, catch, or fishing mortality deemed appropriate for that biomass level. The following biomass levels are provided as examples during development of this action.

- Bin 1 (biomass at least $150 \%$ of target level regardless of trend or biomass at least the target but less than $150 \%$ of target with increasing trend): measures based on biomass that is $150 \%$ of the target level.
- Bin 2 (biomass at least the target but less than $150 \%$ of target with stable or decreasing trend): measures based on biomass at the target level.
- Bin 3 (below the target level, but at least $50 \%$ of the target level and increasing trend): measures based on biomass that is $75 \%$ of the target level.
- Bin 4 (below the target level, but at least $50 \%$ of the target level and stable or decreasing trend): measures based on biomass that is $60 \%$ of the target level.
- Bin 5 (biomass below $50 \%$ of the target level and increasing trend): measures based on biomass that is $40 \%$ of the target level.
- Bin 6 (biomass below $50 \%$ of the target level and stable or decreasing trend): measures based on biomass that is $20 \%$ of the target level.

This was not selected as a preferred alternative due to concerns regarding the complexity of the analysis needed to assign measures to all six bins for all species through the specifications process. Without consideration additional analysis, it was challenging to predict how the resulting measures under this alternative would compare to other alternatives.

Table 8: Summary of Biomass Based Matrix Approach.

| Biomass Level | Biomass Trend |  |  |
| :---: | :---: | :---: | :---: |
|  | Increasing | Stable | Decreasing |
| Very High <br> At least $150 \%$ of the target level | Bin 1 most liberal measures) |  |  |
| High <br> At least the target, but below $150 \%$ of the target level | Bin 1 | Bin 2 |  |
| Low Below the target, but at least $50 \%$ of the target level | Bin 3 | Bin 4 |  |
| Overfished <br> Less than $50 \%$ of the target level | Bin 5 | $\begin{array}{r} \text { Bin } 6(\mathrm{n} \\ \mathrm{m} \end{array}$ | trestrictive ures) |

### 5.1.5.1 Accountability Measures Under Biomass Based Matrix Approach

The process for setting measures under the Biomass Based Matrix Approach can be considered a proactive AM. This is because more restrictive measures would be used when the most recent biomass level and biomass trend indicate a need for greater precautions. Measures would be more liberal when these metrics show less cause for concern.

Two sub-alternatives were considered for reactive AMs under the Biological Reference Point Approach, as described below.

## Sub-Alternative 1E-1: Reactive AMs Similar to Current AMs

This alternative would modify the current reactive AMs (Section 5.1.1) to reflect the use of management measure bins under the Biomass Based Matrix Approach.

This sub-alternative would maintain the three-year average ACL comparison for summer flounder, scup, and black sea bass and the single-year comparison for bluefish for determining if a reactive AM has been triggered. When a reactive AM has been triggered, the appropriate response would vary based on biomass, as described below.

1. If the stock is overfished ( $B<1 / 2 B_{M S Y}$ ), under a rebuilding plan, or the stock status is unknown: The measures associated with the most restrictive bin will be implemented. These may be temporary measures until replaced by measures required by a rebuilding plan, which can take up to two years to implement. If the stock was already in the most restrictive bin or the measures in the most restrictive bin are otherwise expected to continue to result in overages, then those measures must be modified as soon as possible following the determination of the overage such that they are reasonably expected to prevent future overages.
2. If biomass is above the threshold, but below the target ( $1 / 2 \mathrm{~B}_{\mathrm{MSY}}<\mathrm{B}<\mathrm{B}_{\mathrm{MSY}}$ ), and the stock is not under a rebuilding plan:
a. If only the recreational ACL has been exceeded, then the stock would remain in its current bin, but the measures associated with that bin and all other bins, would be re-evaluated with the goal of preventing future ACL overages.
b. If the ABC or $\mathrm{F}_{\text {mSY }}$ (as determined through Alternative Set 4; Section 5.4) is exceeded in addition to the recreational ACL, and the stock has not already moved to a more restrictive bin due to a decrease in biomass, then the measures associated with the next more restrictive bin would be implemented. In addition, measures in all bins would be re-evaluated and revised as appropriate. If the stock moves to a more restrictive bin based on a decrease in biomass, then an additional AM is not needed as the negative impacts on stock status have already been accounted for in the movement to the more restrictive bin.
3. If biomass is above the target $\left(\mathrm{B}>\mathrm{B}_{\mathrm{MSY}}\right)$ : The management measures associated with each bin will be adjusted, taking into account the performance of the measures and the conditions that precipitated the overage.

## Sub-Alternative 1E-2: Reactive AMs Based on Overfishing Status

Under this sub-alternative, if overfishing is occurring ( F is greater than $\mathrm{F}_{\mathrm{MSY}}$ ), and the recreational dead catch to recreational ACL comparison (as described in Section 5.1.1) shows an overage, even if a change in bin was not triggered through updated evaluations of biomass and biomass trend, as described above, the management measures for all bins would be re-evaluated and modified as needed to appropriately constrain recreational catch and end overfishing.

### 5.2 Alternative Set 2: Target Metric for Setting Measures Under Alternatives 1C-1E

The alternatives in Alternative Set 2 establish a target metric for determining the appropriate measures for each bin under Alternatives 1C-1E. None of these alternatives were selected as preferred because Alternatives 1C-1E were not preferred.

### 5.2.1 Alternative 2A: Recreational Harvest Target

Under this alternative, the measures associated with each bin under Alternatives $1 \mathrm{C}-1 \mathrm{E}$ would aim to achieve but not exceed a target level of harvest informed by the RHL (Section 4.4). Under Alternatives $1 \mathrm{C}-1 \mathrm{E}$, each bin represents a range of stock conditions. For this reason, the target level of harvest for each bin may not always be equivalent to the RHL as a range of RHLs could fall under the same bin.

As previously stated, harvest under any set of measures is difficult to predict as it is impacted by many factors besides measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest can vary notably from year to year under the same set of measures. The Council and Commission are supporting the development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. ${ }^{14}$ These improved tools could be used under all alternatives in this document.

### 5.2.2 Alternative 2B: Recreational Catch Target

Under this alternative, the measures associated with each bin under Alternatives 1C-1E would aim to achieve but not exceed a target level of dead catch (i.e., harvest and dead discards) informed by the recreational ACL (Section 4.4). Under Alternatives 1C-1E, each bin represents a range of stock conditions. For this reason, the target level of catch for each bin may not always be equivalent to the recreational ACL as a range of ACLs could fall under the same bin.
As previously stated, catch under any set of measures is difficult to predict as it is impacted by many factors besides measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Catch can vary notably from year to year under the same set of measures. The Council and Commission are supporting the development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. ${ }^{15}$ These improved tools could be used under all alternatives in this document.

### 5.2.3 Alternative 2C: Recreational Fishing Mortality Target

Under this alternative, the measures associated with each bin under Alternatives 1C-1E would aim to achieve but not exceed a target level of fishing mortality for the recreational fishery. Additional consideration is needed regarding how a recreational fishing mortality target would be calculated. The stock assessments for each species calculate a fishing mortality reference point ( $\mathrm{F}_{\mathrm{MSY}}$ ) for the commercial and recreational fisheries combined. Overfishing occurs at the stock level when fishing mortality exceeds this reference point. There are no fishing mortality reference points specific to the recreational fisheries.

[^11]The stock projections used to generate ABCs for these four species include fishing mortality estimates associated with the ABCs. It may be possible to set a recreational target F by applying the existing commercial/recreational catch-based ABC allocation percentages (used to define the ACLs for all four species) to the fishing mortality rate associated with the ABC. However, additional consideration and analysis of this concept is needed before using it in management.

Furthermore, although the current stock assessment models for summer flounder, scup, and bluefish generate estimates of recreational fishing mortality, the current stock assessment for black sea bass does not model the recreational fishery separately from the commercial fishery. Therefore, unless the model structure changes, it would not be possible to generate a fishing mortality estimate for black sea bass to compare against a recreational fishing mortality target.

In addition, past methods and improved statistical analysis tools in development have/are focused on predicting the impacts of measures on catch or harvest. Few tools are available for predicting the impacts of measures on fishing mortality.
For all the reasons described above, much additional work would be needed before this alternative could be used in management.

### 5.3 Alternative Set 3: Conservation Equivalency

This alternative set considered modifications to the use of conservation equivalency through the Commission process for these four recreational species. ${ }^{16}$

### 5.3.1 Alternative 3A: No Action (States Retain Ability to Propose Conservation Equivalent Measures; Preferred)

This alternative would maintain the ability for individual states to submit proposals for alternative recreational management measures that are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Sets 1 and 2) as the measures that would otherwise be implemented. This state-level flexibility can allow measures to be tailored to the unique characteristics of the fisheries in each state. For example, some states have used the conservation equivalency process to maintain a Saturday opening date. The Council and Policy Board supported this level of flexibility and therefore selected this as a preferred alternative.

### 5.3.2 Alternative 3B: Regional Conservation Equivalency

This alternative would allow regional groupings of states to submit proposals for alternative recreational management measures which are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Sets 1 and 2) as the measures which would otherwise be implemented.

Regional groupings of states for summer flounder and black sea bass are defined through Addendum XXII to the Commission's FMP. Regions have not been established for management of the recreational scup and bluefish fisheries. Compared to Alternative 3A, this alternative would reduce the flexibility to tailor measures to the needs of the fisheries in individual states; however, it would provide for greater consistency in management approaches across states.

[^12]Consistency across states can be especially beneficial when fishermen from neighboring states fish in the same or nearby areas.

The Council and Policy Board did not select this as a preferred alternative because it reduces the flexibility afforded to individual states compared to preferred Alternative 3A.

### 5.3.3 Alternative 3C: Conservation Equivalency Disallowed

Under this alternative, conservation equivalency under the Commission process would not be permitted for any of the four species on a state or regional level. This would reduce the flexibility afforded to states/regions compared to the previous two alternatives, but it would help achieve the goals of stability and predictability in measures.
The Council and Policy Board did not select this as a preferred alternative because it reduces the flexibility afforded to individual states compared to preferred Alternative 3A.

### 5.4 Alternative Set 4: Accountability Measures Under Alternatives 1B, 1C-1, and 1E-1

This alternative set considers a change to one component of the reactive AMs under Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$. Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$ include different AM responses under the following three stock conditions:

1. The stock is overfished ( $B<1 / 2 B_{M S Y}$ ), under a rebuilding plan, or the stock status is unknown.
2. Biomass is above the threshold, but below the target $\left(1 / 2 \mathrm{~B}_{\mathrm{MSY}}<\mathrm{B}<\mathrm{B}_{\mathrm{MSY}}\right)$, and the stock is not under a rebuilding plan.
a. Only the recreational ACL has been exceeded.
b. The $\boldsymbol{A B C}$ (Alternative 4A) or $\boldsymbol{F}_{\text {MSY }}$ (Alternative 4B) has been exceeded in addition to the recreational ACL.
3. Biomass is above the target $\left(\mathrm{B}>\mathrm{B}_{\mathrm{MSY}}\right)$.

The text above in bold, underlined italics highlights the differences between Alternatives 4A and 4 B . This represents one small component of the recreational AMs.

### 5.4.1 Alternative 4A: No Action (Catch Compared to ABC)

Under this alternative, when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold, catch relative to the ABC would also be considered. The response to the overage would be more strict if the ABC was also exceeded (e.g., a payback would be required or the stock would be placed in a more restrictive bin, depending on the alternative). If only the recreational ACL was exceeded, the response to the overage would be less strict (e.g., measures would be revised but a payback would not be required or the stock would remain in its current bin, depending on the alternative).

This was not selected as a preferred alternative because the Council and Policy Board agreed that Alternative 4B is an improvement over this alternative as it allows for consideration of recent information to determine if recreational ACL overages contributed to overfishing.

### 5.4.2 Alternative 4B: Fishing mortality compared to Fmsy (Preferred)

Under this alternative, when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold, consideration
would also be given to the most recent estimate of fishing mortality relative to $\mathrm{F}_{\text {MSY }}$. The AM response would be more strict if $\mathrm{F}_{\text {MSY }}$ was also exceeded (e.g., a payback would be required or the stock would be placed in a more restrictive bin, depending on the alternative). If only the recreational ACL was exceeded, the AM response would be less strict (e.g., measures would be revised but a payback would not be required or the stock would remain in its current bin, depending on the alternative).

Estimates of fishing mortality during the years relevant to the evaluation may not always be available as these estimates are provided through the stock assessment which are not updated every year. If an estimate of total fishing mortality is not available for the most recent complete year of catch data, then a comparison of total catch relative to the ABC will be used, as described in the previous section for Alternative 4.1.

This was selected as a preferred alternative because it considers if the recreational ACL overages contributed to overfishing. In addition, this alternative allows for consideration of more recent information than the information considered under Alternative 4A.

### 5.5 Considered But Rejected Alternatives

In May 2022, Council staff put forward a recommendation for an alternative that was within the range of alternatives considered up to that point. The Council staff recommendation considered input from the FMAT/PDT, the SSC, the Advisory Panels, and public comments. This specific recommendation was not considered during previous FMAT/PDT, Advisory Panel, Council, or Policy Board meetings. It was first presented during the June 2022 Council and Policy Board meeting when final action took place.

The Council staff recommendation acknowledged that the Council is required by law to set management measures that are expected to prevent overfishing. Council staff cautioned that the Council should not recommend measures that are expected to result in recreational ACL overages unless it is also determined that the commercial sector will not achieve their full ACL; otherwise, the risk of overfishing would be too high. This is because the ABCs for all four species are equal to the sum of the commercial and recreational ACLs. The ABC is set less than or equal to the overfishing limit to account for scientific uncertainty.
None of the options in this action were meant to impact the ability of the commercial sector to achieve their full ACL. As such, the Council staff recommendation argued that recreational management measures must aim to prevent recreational ACL overages in order to proactively prevent overfishing on an annual basis and comply with the MSA.

In light of these considerations, the Council staff recommendation was to: 1 ) set recreational measures for two years at a time, 2) use improved statistical methods for predicting the impacts of measures on harvest and discards, and 3) incorporate considerations related to variability and uncertainty in the recreational data. Under the staff recommendation, the only required modifications to the FMPs would be to allow recreational measures to be set for two years at a time. The reactive AMs could be modified as described in Section 5.1.2.3 to allow paybacks to be spread across two years and the AM modifications considered under Alternative Set 4 (Section 5.4) could also be used in combination with the staff recommendation.

Council staff did not support modifying the FMP to require use of specific statistical methods when setting measures as this can limit the flexibility to adapt to changing circumstances and
improved methods. Improvements to these methods can and are being made without changes to the FMP.

The timing of a two-year recreational measures cycle under the Council staff recommendation would align with the timing of updated management track stock assessments. In the interim year, measures would be reviewed and modified only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. This could provide greater stability in measures compared to the current process (represented by Alternative 1A, which has the potential for annual changes) as the intent would be to change measures when updated stock assessment information is available and not overly react to one additional year of MRIP data in the interim year.

The Council and Policy Board did not support the Council staff recommendation, citing concerns that it is too similar to the current process. Given that the Council staff recommendation was not discussed by the Council and Policy Board prior to the meeting when final action took place, it is presented here as a "considered but rejected" alternative and is not further analyzed in this document.

No additional noteworthy alternatives were considered but rejected from further development. This action was intentionally limited in scope due to a desire to implement a new process for setting recreational measures in a timely manner. As described in Section 4.1, initiation of this action resulted from discussions through the broader Recreational Reform Initiative. Other topics may be developed through separate Recreational Reform Initiative actions.

## 6 Description of the Affected Environment

The affected environment consists of those physical, biological, and human components of the environment expected to experience impacts if any of the actions considered in this document were to be implemented. This document focuses on five aspects of the affected environment, which are defined as valued ecosystem components (VECs; Beanlands and Duinker 1984).
The VECs include:

- Human communities
- Summer flounder, scup, black sea bass, and bluefish
- Non-target species
- Habitat
- Protected species

The following sections describe the recent condition of the VECs.

### 6.1 Social and Economic Environment

The following sections summarize the recent conditions of the summer flounder, scup, black sea bass, and bluefish fisheries. The trends summarized below mostly consider data through 2021 (for landings) or 2019 (for discards) as final data from more recent years were not available at the time of writing this document. Most information is provided for the recreational fisheries only as this action focuses on the process for setting recreational management measures. Summary information on commercial fisheries for these species can be found in the Fishery Information Documents available at https://www.mafmc.org/fishery-performance-reports.

In July 2018, MRIP released revisions to their time series of recreational catch and landings estimates based on adjustments for a revised angler intercept methodology and a new effort estimation methodology (i.e., a transition from a telephone-based effort survey to a mail-based effort survey). The revised estimates of catch and landings are several times higher than the previous estimates for shore and private boat modes. All recreational estimates in this document reflect revised MRIP estimates except where otherwise noted.

For all four species, recreational harvest estimates for 2020 were impacted by temporary suspension of shoreside intercept surveys due to the COVID-19 pandemic. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. These proxy data match the time, place, and fishing mode combinations that would have been sampled had the intercept surveys continued uninterrupted. Proxy data were combined with observed data to produce 2020 catch estimates using the standard estimation methodology. Commercial landings reporting in 2020 continued uninterrupted.

### 6.1.1 Summer Flounder Recreational Fisheries

Table 9 shows summer flounder catch and landings limits from 2012 through 2023, as well as commercial and recreational landings through 2021. Total (commercial and recreational combined) summer flounder landings generally declined throughout the early 1980s, and increased again in the mid-2000s before dropping to a time series low of 13.74 million pounds in 2018.
The Council and Commission determine annually whether to manage the recreational fishery under coastwide measures or conservation equivalency. Under conservation equivalency, state- or region- specific measures are developed through the Commission's management process and submitted to NMFS. The combined state or regional measures must achieve the same level of harvest as a set of coastwide measures developed to adhere to the overall RHL. If NMFS considers the combination of the state- or region- specific measures to be "equivalent" to the coastwide measures, they may then waive regulations in federal waters. Anglers fishing in federal waters are then subject to the measures of the state in which they land summer flounder.

The recreational fishery has been managed using federal conservation equivalency each year since 2001. Since 2014, a regional approach has been used, under which the states within each region must have identical size limits, possession limits, and season length. Table 10 shows the 2021 and 2022 regional conservation equivalency measures. Measures were adjusted in 2022 to allow for up to a $16.5 \%$ liberalization in harvest, given the increase in the RHL between 2021 and 2022 and because recent harvest estimates have been well below the 2022 RHL.

MRIP estimates indicate that recreational catch (harvest plus live and dead discards) for summer flounder peaked in 2010 with 58.89 million fish caught. Recreational harvest peaked in 1983, with 25.78 million fish landed, totaling 36.74 million pounds. Recreational catch was lowest in 1989 with 5.06 million fish caught. Recreational harvest in numbers of fish reached a low in 2021 with 2.32 million fish landed ( 6.82 million pounds), while recreational harvest in pounds was lowest in 1989 at 5.66 million pounds ( 3.10 million fish; Figure 1).
Across all recreational fishing modes (for-hire, private/rental vessel, and from shore), MRIP estimated a total of $7,482,724$ directed angler trips for which summer flounder was the primary target in 2021 from Maine through North Carolina.

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2021, 904 vessels held summer flounder federal party/charter permits. ${ }^{6}$ Many of these vessels also hold recreational permits for scup and black sea bass.
On average, an estimated $77 \%$ of the recreational landings (in numbers of fish) occurred in state waters over the past ten years (Table 11). Most summer flounder are typically landed in New York and New Jersey (Table 12).

About $86 \%$ of recreational summer flounder harvest from 2019-2021 was from anglers who fished on private or rental boats. About $4 \%$ was from party or charter boats, and about $10 \%$ was from anglers fishing from shore (Table 13).

Table 9: Summary of catch limits, landings limits, and landings for commercial and recreational summer flounder fisheries from 2012 through 2023. Values are in millions of pounds.

| Measures | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | $2023{ }^{\text {c }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ABC | 25.58 | 22.34 | 21.94 | 22.57 | 16.26 | 11.30 | 13.23 | 25.03 | 25.03 | 27.11 | 33.12 | 33.12 |
| Commercial ACL | 14.00 | 12.11 | 12.87 | 13.34 | 9.43 | 6.57 | 7.70 | 13.53 | 13.53 | 14.63 | 18.48 | 18.21 |
| Commercial quota ${ }^{\text {a }}$ | 12.73 | 11.44 | 10.51 | 11.07 | 8.12 | 5.66 | 6.63 | 10.98 | 11.53 | 12.49 | 15.53 | 15.27 |
| Commercial landings | 13.05 | 12.56 | 11.00 | 10.71 | 7.80 | 5.87 | 6.17 | 9.06 | 9.12 | 10.36 | -- | -- |
| \% of com. quota landed | 102\% | 110\% | 105\% | 97\% | 96\% | 104\% | 93\% | 83\% | 79\% | 83\% | -- | -- |
| Recreational ACL | 11.58 | 10.23 | 9.07 | 9.44 | 6.84 | 4.72 | 5.53 | 11.51 | 11.51 | 12.48 | 14.64 | 14.90 |
| RHL ${ }^{\text {a }}$ | 8.49 | 7.63 | 7.01 | 7.38 | 5.42 | 3.77 | 4.42 | 7.69 | 7.69 | 8.32 | 10.36 | 10.62 |
| Harvest - OLD MRIP | 6.49 | 7.36 | 7.39 | 4.72 | 6.18 | 3.19 | 3.35 | -- | -- | -- | -- | -- |
| Harvest - NEW MRIP | 16.13 | 19.41 | 16.23 | 11.83 | 13.24 | 10.09 | 7.60 | 7.80 | 10.06 | 6.82 | -- | -- |
| \% of RHL landed ${ }^{\text {b }}$ | 76\% | 96\% | 105\% | 64\% | 114\% | 85\% | 76\% | 101\% | 131\% | 82\% | -- | -- |

${ }^{\text {a }}$ For 2012-2014, commercial quotas and RHLs are adjusted for Research Set Aside (RSA). Quotas and RHLs for 2015-2023 do not reflect an adjustment for RSA due to the suspension of the program in 2014. Commercial quotas also reflect deductions from prior year landings overages and discard-based Accountability Measures.
${ }^{\mathrm{b}}$ The revised MRIP data cannot be compared to RHLs prior to 2019, given that these limits were set based on an assessment that used previous MRIP data. For the comparison of harvest to the RHL, old MRIP values are used for 2012-2018 and revised MRIP values are used for 2019-2021.
${ }^{\text {c }}$ Commercial and recreational ACLs, ACTs, the commercial quota, and RHL for 2023 are pending implementation and reflect revisions to the commercial/recreational allocations.

Table 10: Summer flounder recreational fishing measures 2021-2022, by state, under regional conservation equivalency. Conservation equivalency regions (highlighted in alternating colors) include: 1) Massachusetts, 2) Rhode Island, 3) Connecticut and New York, 4) New Jersey, 5) Delaware, Maryland, The Potomac River Fisheries Commission, and Virginia, and 6) North Carolina.

| State | 2021 |  |  | 2022 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Minimum Size | Possession Limit | Open Season | Minimum Size | Possessio n Limit | Open Season |
| Massachusetts | 17 | 5 fish | May 23-Oct 9 | 16.5 | 5 fish | May 21-Sept 19 |
| Rhode Island (Private, For-Hire, and all other shore-based fishing sites) | 19 | 6 fish | May 3-Dec 31 | 18 | 4 fish | May 3-Dec 31 |
| RI 7 designated shore sites | 19 | 4 fish $^{\text {a }}$ |  | 18 | 2 fish $^{\text {a }}$ |  |
|  | 17 | 2 fish $^{\text {a }}$ |  | 17 | 2 fish $^{\text {a }}$ |  |
| Connecticut | 19 | 4 fish | May 4- Sept 30 | 18.5 | 4 fish | May 1-Oct 9 |
| CT Shore Program (45 designed shore sites) | 17 |  |  | 17 |  |  |
| New York | 19 |  |  | 18.5 |  |  |
| New Jersey | 18 | 3 fish | May 22-Sept 19 | $17-17.99$ slot limit | 2 fish | May 2-Sept 27 |
|  |  |  |  | 18 | 1 fish |  |
| NJ Shore program site (ISBSP) | 16 | 2 fish |  | 16 | 2 fish |  |
| New Jersey/Delaware Bay COLREGS | 17 | 3 fish |  | 17 | 3 fish |  |
| Delaware | 16.5 | 4 fish | Jan 1- Dec 31 | 16 | 4 fish | Jan 1-Dec 31 |
| Maryland |  |  |  |  |  |  |
| PRFC |  |  |  |  |  |  |
| Virginia |  |  |  |  |  |  |
| North Carolina | 15 | 4 fish | Aug 16-Sept 30 ${ }^{\text {b }}$ | 15 | 1 fish | Sept 1-Sept 30 ${ }^{\text {b }}$ |

${ }^{\text {a }}$ Rhode Island's shore program includes a combined possession limit of 6 fish, no more than 2 fish at 17 -inch minimum size limit.
${ }^{\mathrm{b}}$ North Carolina restricted their recreational season in recent years for all flounders (southern, gulf, and summer flounder) due to the need to end overfishing on
southern flounder. North Carolina manages all flounder in the recreational fishery under the same regulations.


Figure 1: MRIP estimates of recreational summer flounder harvest in numbers of fish and pounds and catch in numbers of fish, ME - NC, 1981-2021.

Table 11: Estimated percentage of summer flounder recreational landings (in numbers of fish) from state vs. federal waters, Maine through North Carolina, 2012-2021.

| Year | State $\leq \mathbf{3} \mathbf{~ m i}$ | EEZ $>\mathbf{3} \mathbf{~ m i}$ |
| :---: | :---: | :---: |
| 2012 | $86 \%$ | $14 \%$ |
| 2013 | $77 \%$ | $23 \%$ |
| 2014 | $78 \%$ | $22 \%$ |
| 2015 | $82 \%$ | $18 \%$ |
| 2016 | $79 \%$ | $21 \%$ |
| 2017 | $79 \%$ | $21 \%$ |
| 2018 | $83 \%$ | $17 \%$ |
| 2019 | $77 \%$ | $23 \%$ |
| 2020 | $61 \%$ | $39 \%$ |
| 2021 | $66 \%$ | $34 \%$ |
| Avg. 2012-2021 | $\mathbf{7 7 \%}$ | $\mathbf{2 3 \%}$ |
| Avg. 2019-2021 | $\mathbf{6 9 \%}$ | $\mathbf{3 1 \%}$ |

Table 12: State contribution (as a percentage) to total recreational landings of summer flounder (in numbers of fish), from Maine through North Carolina, 2019-2021.

| State | $\mathbf{2 0 1 9}$ | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 1}$ | $\mathbf{2 0 1 9 - 2 0 2 1}$ <br> average |
| :---: | :---: | :---: | :---: | :---: |
| Maine | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| New Hampshire | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Massachusetts | $2 \%$ | $2 \%$ | $2 \%$ | $2 \%$ |
| Rhode Island | $9 \%$ | $3 \%$ | $2 \%$ | $6 \%$ |
| Connecticut | $4 \%$ | $4 \%$ | $5 \%$ | $4 \%$ |
| New York | $24 \%$ | $21 \%$ | $15 \%$ | $23 \%$ |
| New Jersey | $46 \%$ | $57 \%$ | $58 \%$ | $50 \%$ |
| Delaware | $4 \%$ | $6 \%$ | $4 \%$ | $5 \%$ |
| Maryland | $3 \%$ | $2 \%$ | $3 \%$ | $3 \%$ |
| Virginia | $6 \%$ | $4 \%$ | $10 \%$ | $5 \%$ |
| North Carolina | $1 \%$ | $1 \%$ | $1 \%$ | $1 \%$ |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |

Table 13: The percent of summer flounder landings (in number of fish) by recreational fishing mode, Maine through North Carolina, 2012-2021.

| Year | Shore | Party/Charter | Private/Rental | Total number of fish <br> landed (millions) |
| :---: | :---: | :---: | :---: | :---: |
| 2012 | $9 \%$ | $3 \%$ | $88 \%$ | 5.74 |
| 2013 | $11 \%$ | $4 \%$ | $85 \%$ | 6.60 |
| 2014 | $7 \%$ | $8 \%$ | $84 \%$ | 5.36 |
| 2015 | $7 \%$ | $7 \%$ | $86 \%$ | 4.03 |
| 2016 | $8 \%$ | $4 \%$ | $89 \%$ | 4.30 |
| 2017 | $13 \%$ | $4 \%$ | $83 \%$ | 3.17 |
| 2018 | $11 \%$ | $6 \%$ | $84 \%$ | 2.41 |
| 2019 | $10 \%$ | $3 \%$ | $87 \%$ | 2.38 |
| 2020 | $18 \%$ | $2 \%$ | $80 \%$ | 3.49 |
| 2021 | $11 \%$ | $7 \%$ | $82 \%$ | 2.32 |
| $\mathbf{7 \%} \%$ | - |  |  |  |
| \%of total, 2012-2021 | $\mathbf{1 0 \%}$ | $\mathbf{4 \%}$ | $\mathbf{8 6 \%}$ | - |
| \%of total, 2019-2021 | $\mathbf{1 3 \%}$ | $\mathbf{4 \%}$ | $\mathbf{8 3 \%}$ | - |

### 6.1.2 Scup Recreational Fisheries

Table 14 shows scup catch and landings limits from 2012 through 2023, as well as commercial and recreational landings through 2021. Total scup landings (commercial and recreational) from Maine to North Carolina peaked in 1981 at over 32 million pounds and reached a low of 6 million pounds in 1998. In 2021, about 29.55 million pounds of scup were landed by commercial and recreational fishermen (Figure 2).

The recreational scup fishery is managed on a coast-wide basis in federal waters. Federal waters measures remained unchanged from 2015-2021 (Table 15). For the 2022 fishing year, the Council and Commission approved a 1 -inch increase to the scup recreational minimum size in state and federal waters. In federal waters, this results in a 10 -inch total length minimum size limit. Collectively, the increased size limits in state and federal waters is expected to achieve an approximate $33 \%$ reduction in harvest for 2022 compared to the 2019-2021 average.

The Commission applies a regional management approach to recreational scup fisheries in state waters, where New York, Rhode Island, Connecticut, and Massachusetts develop regulations intended to achieve $97 \%$ of the RHL. The recreational scup measures in state waters vary by state. State waters measures remained unchanged from 2015 through 2017. Massachusetts through New Jersey liberalized their minimum size limits and/or seasons in 2018 compared to 2017, there were very minor changes in the state regulations from 2018 to 2019, and no changes to state measures from 2019 to 2021. In 2022, all states were required to increase their minimum size limits by one inch (Table 16).

From 1981-2020, recreational catch of scup (in number of fish) peaked in 2017 at 41.20 million scup and landings peaked in 1986 with an estimated 30.43 million scup landed by recreational fishermen from Maine through North Carolina. Recreational catch was lowest in 1998 when an estimated 6.86 million scup were caught and 2.74 million scup were landed. Recreational anglers from Maine through North Carolina caught an estimated 31.70 million scup and landed 16.56 million scup (about 16.62 million pounds) in 2021 (Figure 2).

Across all recreational fishing modes (for-hire, private/rental vessel, and from shore), MRIP estimated a total of $2,693,676$ directed angler trips for which scup was the primary target in 2021 from Maine through North Carolina.

Vessels carrying passengers for hire in federal waters must obtain a federal party/charter permit. In 2021, 780 vessels held scup federal party/charter permits. Many of these vessels also held party/charter permits for summer flounder and black sea bass.

Most recreational scup catch occurs in state waters during the warmer months when the fish migrate inshore. Between 2019 and 2021, on average $92.9 \%$ of recreational scup catch (in numbers of fish) occurred in state waters and about $7.1 \%$ occurred in federal waters (Table 17). New York, Connecticut, Rhode Island, Massachusetts, and New Jersey accounted for over 99\% of recreational scup harvest in 2021 (Table 18).

About $73 \%$ of recreational scup landings (in numbers of fish) in 2021 were from anglers who fished on private or rental boats and about $18 \%$ were from anglers fishing from shore. About $9 \%$ was from anglers fishing on party or charter boats (Table 19).

Table 14: Summary of scup catch limits, landings limits, and landings, 2012 through 2023. Values are in millions of pounds unless otherwise noted.

| Measure | $\mathbf{2 0 1 2}$ | $\mathbf{2 0 1 3}$ | $\mathbf{2 0 1 4}$ | $\mathbf{2 0 1 5}$ | $\mathbf{2 0 1 6}$ | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 8}$ | $\mathbf{2 0 1 9}$ | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 1}$ | $\mathbf{2 0 2 2}$ | $\mathbf{2 0 2 3}$ c |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ABC | 40.88 | 38.71 | 35.99 | 33.77 | 31.11 | 28.4 | 39.14 | 36.43 | 35.77 | 34.81 | 32.11 | 29.67 |
| Com. ACL | 31.89 | 30.19 | 28.07 | 26.35 | 24.26 | 22.15 | 30.53 | 28.42 | 27.9 | 27.15 | 25.05 | 19.29 |
| Com. quota | 27.91 | 23.53 | 21.95 | 21.23 | 20.47 | 18.38 | 23.98 | 23.98 | 22.23 | 20.5 | 20.38 | 14.01 |
| Com. landings | 14.88 | 17.87 | 15.96 | 17.03 | 15.76 | 15.45 | 13.38 | 13.78 | 13.58 | 12.93 | -- | -- |
| \% of com. quota <br> landed | $53 \%$ | $76 \%$ | $72 \%$ | $80 \%$ | $77 \%$ | $84 \%$ | $55 \%$ | $57 \%$ | $61 \%$ | $63 \%$ | -- | -- |
| Rec. ACL | 8.99 | 8.52 | 7.92 | 7.43 | 6.84 | 6.25 | 8.61 | 8.01 | 7.87 | 7.66 | 7.06 | 10.39 |
| RHL | 8.45 | 7.55 | 7.03 | 6.8 | 6.09 | 5.5 | 7.37 | 7.37 | 6.51 | 6.07 | 6.08 | 9.27 |
| Rec. landings, <br> old MRIP | 4.17 | 5.37 | 4.43 | 4.41 | 4.26 | 5.42 | 5.61 | -- | -- | -- | -- | -- |
| Rec. landings, <br> new MRIP | 8.27 | 12.64 | 10.27 | 12.17 | 10 | 13.53 | 12.98 | 14.12 | 12.91 | 16.62 | -- | -- |
| \% of RHL <br> harvested <br> (based on old MRIP <br> estimates through <br> 2019; 2020-2021 <br> based on new MRIP <br> estimates) | $49 \%$ | $71 \%$ | $63 \%$ | $65 \%$ | $70 \%$ | $98 \%$ | $76 \%$ | $191 \%$ | $198 \%$ | $274 \%$ | -- | -- |

${ }^{\text {a }}$ Commercial quotas and RHLs reflect the removal of projected discards from the sector-specific ACLs. For 2012-2014, these limits were also adjusted for Research Set Aside.
${ }^{\mathrm{b}}$ The percent of RHL harvested is based on a comparison of the RHL to the old MRIP estimates through 2018. The RHLs prior to 2020 did not account for the new MRIP estimates, which were released in July 2018 and were not incorporated into a stock assessment until 2019; therefore, it would be inappropriate to compare past RHLs to the revised MRIP estimates. The first year that the RHL was set using the new MRIP estimates was 2020.
${ }^{\text {c }}$ Commercial and recreational ACLs, ACTs, the commercial quota, and RHL for 2023 are pending implementation and reflect revisions to the commercial/recreational allocations.

Table 15: Federal recreational measures for scup, 2005-2022.

| Regulation | $\begin{gathered} 2005- \\ 2007 \end{gathered}$ | $\begin{gathered} 2008- \\ 2009 \end{gathered}$ | $\begin{gathered} 2010- \\ 2011 \end{gathered}$ | 2012 | 2013 | 2014 | $\begin{gathered} 2015- \\ 2021 \end{gathered}$ | 2022 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Min. size <br> (total <br> length) | 10 in. | 10.5 in . | 10.5 in. | 10.5 in. | 10 in. | $9 \mathrm{in}$. | 9 in. | 10 in. |
| Possession limit | 50 | 15 | 10 | 20 | 30 | 30 | 50 | 50 |
| Open season | $\begin{gathered} \text { Jan } 1- \\ \text { Feb } 28 \& \\ \text { Sept } 18- \\ \text { Nov } 30 \end{gathered}$ | $\begin{gathered} \text { Jan } 1- \\ \text { Feb } 28 \\ \& \text { Oct } 1- \\ \text { Oct } 31 \end{gathered}$ | $\begin{aligned} & \text { Jun } 6- \\ & \text { Sept } 26 \end{aligned}$ | $\begin{aligned} & \text { Jan } 1- \\ & \text { Dec } 31 \end{aligned}$ | $\begin{aligned} & \text { Jan } 1- \\ & \text { Dec } 31 \end{aligned}$ | $\begin{aligned} & \text { Jan } 1- \\ & \text { Dec } 31 \end{aligned}$ | $\begin{gathered} \text { Jan } 1 \\ - \text { Dec } \\ 31 \end{gathered}$ | $\begin{gathered} \text { Jan } 1 \\ - \text { Dec } \\ 31 \end{gathered}$ |

Table 16: State recreational fishing measures for scup in 2021 and 2022. Note: the minimum size limit was the only regulation updated in 2022 and timing of implementation varied by state.

| State | Minimum size (inches) |  | Possession limit | Open season |
| :---: | :---: | :---: | :---: | :---: |
|  | 2021 | 2022 |  |  |
| MA (private \& shore) | 9 | 10 | 30 fish; 150 fish/vessel with 5+ anglers on board | April 13-Dec 31 |
| MA (party/charter) | 9 | 10 | 30 fish | April 13-30; Jul 1-Dec 31 |
|  |  |  | 50 fish | May 1-Jun 30 |
| RI (private \& shore) | 9 | 10 |  |  |
| RI shore program (7 designated shore sites) | 8 | 9 | 30 fish | Jan 1-Dec 31 |
| RI (party/charter) | 9 | 10 | 30 fish | Jan 1-Aug 31; <br> Nov 1-Dec 31 |
|  |  |  | 50 fish | Sept 1-Oct 31 |
| CT (private \& shore) | 9 | 10 |  |  |
| CT shore program <br> (45 designed shore sites) | 8 | 9 | 30 fish | Jan 1-Dec 31 |
| CT (party/charter) | 9 | 10 | 30 fish | Jan 1-Aug 31; <br> Nov 1-Dec 31 |
|  |  |  | 50 fish | Sept 1-Oct 31 |
| NY (private \& shore) | 9 | 10 | 30 fish | Jan 1-Dec 31 |
| NY (party/charter) | 9 | 10 | 30 fish | $\begin{aligned} & \text { Jan 1-Aug 31; } \\ & \text { Nov 1-Dec } 31 \end{aligned}$ |
|  |  |  | 50 fish | Sept 1-Oct 31 |


| NJ | 9 | 10 | 50 fish | Jan 1-Dec 31 |
| :---: | :---: | :---: | :---: | :---: |
| DE | 8 | 9 | 50 fish | Jan 1-Dec 31 |
| MD | 8 | 9 | 50 fish | Jan 1-Dec 31 |
| VA | 8 | 9 | 30 fish | Jan 1-Dec 31 |
| NC, North of Cape <br> Hatteras | 8 | 9 | 50 fish | Jan 1-Dec 31 |



Figure 2: MRIP estimates of recreational scup harvest in numbers of fish and pounds and catch in numbers of fish, ME - NC, 1981-2021.

Table 17: Estimated percent of scup caught by recreational fishermen in state and federal waters, Maine - North Carolina, 2012 - 2021. Percentages calculated based on numbers of fish.

| Year | State waters | Federal waters |
| :---: | :---: | :---: |
| $\mathbf{2 0 1 2}$ | $99.7 \%$ | $0.3 \%$ |
| $\mathbf{2 0 1 3}$ | $96.3 \%$ | $3.7 \%$ |
| 2014 | $96.5 \%$ | $3.5 \%$ |
| 2015 | $98.9 \%$ | $1.1 \%$ |
| 2016 | $93.5 \%$ | $6.5 \%$ |
| 2017 | $95.9 \%$ | $4.1 \%$ |
| 2018 | $96.2 \%$ | $3.8 \%$ |
| 2019 | $95.5 \%$ | $4.5 \%$ |
| $\mathbf{2 0 2 0}$ | $88.6 \%$ | $11.4 \%$ |
| $\mathbf{2 0 2 1}$ | $94.4 \%$ | $5.6 \%$ |
| $\mathbf{2 0 1 2 - 2 0 2 1}$ average | $\mathbf{9 5 . 6 \%}$ | $\mathbf{4 . 4 \%}$ |
| $\mathbf{2 0 1 9 - 2 0 2 1}$ average | $\mathbf{9 2 . 9 \%}$ | $\mathbf{7 . 1 \%}$ |

Table 18: Estimated percent of scup harvested by state, 2019 - 2021. Percentages calculated based on numbers of fish.

| State | $\mathbf{2 0 1 9}$ | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 1}$ | $\mathbf{2 0 1 9 - 2 0 2 1}$ average |
| :---: | :---: | :---: | :---: | :---: |
| Maine | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| New Hampshire | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Massachusetts | $14 \%$ | $9 \%$ | $23 \%$ | $15 \%$ |
| Rhode Island | $20 \%$ | $10 \%$ | $15 \%$ | $15 \%$ |
| Connecticut | $16 \%$ | $23 \%$ | $17 \%$ | $19 \%$ |
| New York | $49 \%$ | $48 \%$ | $43 \%$ | $47 \%$ |
| New Jersey | $1 \%$ | $9 \%$ | $1 \%$ | $4 \%$ |
| Delaware | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Maryland | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Virginia | $0 \%$ | $0 \%$ | $1 \%$ | $0 \%$ |
| North Carolina | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |

Table 19: Scup harvest (in numbers of fish) by recreational fishing mode, Maine - North Carolina, 2012-2021. Note: percentages may not sum to $100 \%$ due to rounding.

| Year | Private/rental | Shore | Party/charter | Total number |
| :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 1 2}$ | $69 \%$ | $14 \%$ | $16 \%$ | $7,334,831$ |
| $\mathbf{2 0 1 3}$ | $51 \%$ | $34 \%$ | $15 \%$ | $11,547,030$ |
| $\mathbf{2 0 1 4}$ | $65 \%$ | $20 \%$ | $15 \%$ | $9,488,947$ |
| $\mathbf{2 0 1 5}$ | $76 \%$ | $17 \%$ | $8 \%$ | $11,498,780$ |
| $\mathbf{2 0 1 6}$ | $56 \%$ | $34 \%$ | $10 \%$ | $9,143,579$ |
| $\mathbf{2 0 1 7}$ | $65 \%$ | $24 \%$ | $11 \%$ | $13,820,610$ |
| $\mathbf{2 0 1 8}$ | $48 \%$ | $43 \%$ | $9 \%$ | $14,545,489$ |
| $\mathbf{2 0 1 9}$ | $56 \%$ | $29 \%$ | $15 \%$ | $14,954,157$ |
| $\mathbf{2 0 2 0}$ | $62 \%$ | $28 \%$ | $10 \%$ | $14,493,250$ |
| $\mathbf{2 0 2 1}$ | $73 \%$ | $18 \%$ | $9 \%$ | $16,595,455$ |
| $\mathbf{2 0 1 2 - 2 0 2 1}$ average | $\mathbf{6 2 \%}$ | $\mathbf{2 6 \%}$ | $\mathbf{1 2 \%}$ | $\mathbf{1 2 , 3 4 2 , 2 1 3}$ |
| $\mathbf{2 0 1 9 - 2 0 2 1}$ average | $\mathbf{6 4 \%}$ | $\mathbf{2 5 \%}$ | $\mathbf{1 1 \%}$ | $\mathbf{1 5 , 3 4 7 , 6 2 1}$ |

### 6.1.3 Black Sea Bass Recreational Fisheries

Table 20 shows black sea bass catch and landings limits from 2012 through 2023, as well as commercial and recreational landings through 2021. Total landings (commercial and recreational) in 2021 totaled 16.48 million pounds and were the highest in the time series going back to 1981 (Figure 3).

State and federal waters recreational management measures remained virtually unchanged from 2018-2021 (Table 21, Table 22). In 2022, state measures were modified with the goal of achieving a $20.7 \%$ reduction in harvest compared to the 2018-2021 average (Table 23). The Council and Commission agreed to use the federal conservation equivalency process to waive federal waters measures for black sea bass for the first time in 2022.

Between 1981 and 2021, recreational catch (landings and live and dead discards) of black sea bass from Maine through Cape Hatteras, NC was lowest in 1984 at 4.73 million fish and was highest in 2021 at 42.67 million fish. Recreational harvest in weight was highest in 2016 at 12.05 million pounds; however, harvest in numbers of fish was highest in 1986 at 19.28 million fish. Recreational harvest in weight was lowest in 1981 at 1.53 million pounds, while harvest in numbers of fish was lowest in 1998 at 1.56 million fish (Figure 3).

It should be noted that the coastwide 2016 and 2017 MRIP estimates for black sea bass are viewed as outliers by the Monitoring and Technical Committees and the Scientific and Statistical Committee due to the influence of very high estimates in individual states and waves (i.e., New York 2016 wave 6 for all modes and New Jersey 2017 wave 3 for the private/rental mode). Steps have been taken to address uncertainty in these specific estimates in the stock assessment and in management.

Recreational harvest exceeded the 2020 RHL by $56 \%$ and the 2021 RHL by $89 \%$ (Table 20). The Council and Board agreed to leave the recreational bag, size, and season limits unchanged in 2020 and 2021 despite expected RHL overages. This was viewed as a temporary solution to allow more time to consider how to fully transition the management system to use of the revised MRIP data, including ongoing considerations related to the commercial/recreational allocation and the Recreational Reform Initiative.

In 2021, $52 \%$ of black sea bass harvested by recreational fishermen from Maine through Cape Hatteras, North Carolina (in numbers of fish) were caught in state waters and $48 \%$ in federal waters (Table 25). Most of the recreational harvest in numbers of fish in 2021 was landed in New Jersey (30\%), followed by Massachusetts (19\%), New York (14\%), and Connecticut (13\%; Table 26).
Across all recreational fishing modes (for-hire, private/rental vessel, and from shore), MRIP estimated a total of $1,687,815$ directed angler trips for which black sea bass was the primary target in 2021 from Maine through North Carolina.

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2021, 895 vessels held a federal party/charter permit.
About $84 \%$ of the recreational black sea bass harvest in numbers of fish in 2021 came from anglers fishing on private or rental boats, about $12 \%$ from anglers aboard party or charter boats, and $4 \%$ from anglers fishing from shore (Table 27).

Table 20: Summary of catch and landings limits, and landings for commercial and recreational black sea bass fisheries from Maine through Cape Hatteras, NC 2012 through 2023. All values are in millions of pounds unless otherwise noted.

| Management measure $^{\mathbf{2 0 1 2}^{\mathbf{a}}}$ | $\mathbf{2 0 1 3}^{\mathbf{a}}$ | $\mathbf{2 0 1 4}^{\mathbf{a}}$ | $\mathbf{2 0 1 5}^{\mathbf{a}}$ | $\mathbf{2 0 1 6}^{\mathbf{b}}$ | $\mathbf{2 0 1 7}^{\mathbf{c}}$ | $\mathbf{2 0 1 8}^{\mathbf{c}}$ | $\mathbf{2 0 1 9}^{\mathbf{c}}$ | $\mathbf{2 0 2 0}^{\mathbf{c}}$ | $\mathbf{2 0 2 1}^{\mathbf{c}, \mathbf{d}}$ | $\mathbf{2 0 2 2}^{\mathbf{c , d}}$ | $\mathbf{2 0 2 3}^{\mathbf{c}, \mathrm{d}, \mathbf{e}}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ABC | 4.50 | 5.50 | 5.50 | 5.50 | 6.67 | 10.47 | 8.94 | 8.94 | 15.07 | 17.45 | 19.26 | 17.01 |
| Com. ACL \& ACT | 1.98 | 2.60 | 2.60 | 2.60 | 3.15 | 5.09 | 4.35 | 4.35 | 6.98 | 9.52 | 10.10 | 7.50 |
| Commercial quota $^{\mathbf{e}}$ | 1.71 | 2.17 | 2.17 | 2.21 | 2.71 | 4.12 | 3.52 | 3.52 | 5.58 | 6.09 | 6.47 | 4.80 |
| Commercial landings | 1.72 | 2.26 | 2.40 | 2.38 | 2.59 | 4.01 | 3.46 | 3.52 | 4.24 | 4.52 | -- | -- |
| \% of com. quota landed | $101 \%$ | $104 \%$ | $111 \%$ | $108 \%$ | $96 \%$ | $97 \%$ | $98 \%$ | $100 \%$ | $76 \%$ | $74 \%$ | -- | -- |
| Rec. ACL \& ACT | 1.86 | 2.90 | 2.90 | 2.90 | 3.52 | 5.38 | 4.59 | 4.59 | 8.09 | 7.93 | 8.76 | 9.16 |
| RHL |  |  |  |  |  |  |  |  |  |  |  |  |

${ }^{\text {a }}$ Catch and landings limits for 2010-2015 were based on a constant catch approach used by the Council's SSC to set the ABC.
${ }^{\mathrm{b}}$ Catch and landings limits for 2016 were based on ABC that was set using a data poor management strategy evaluation approach.
${ }^{\text {c }}$ Catch and landings limits for 2017-2023 were set based on a peer reviewed and approved stock assessment. Starting with 2020, these catch and landings limits are based on a stock assessment that incorporates the revised time series of MRIP data.
${ }^{\mathrm{d}}$ The catch and landings limits for 2021 and beyond account for revisions to the Council's risk policy.
${ }^{\mathrm{e}}$ The commercial and recreational ACLs, ACTs, RHL, and commercial quota were revised for 2023 to account for recently adopted changes to the commercial/recreational allocation.
${ }^{\mathrm{f}}$ The commercial quotas and RHLs for 2006-2014 account for deductions for the Research Set Aside program.
${ }^{\mathrm{g}}$ Provided to the NMFS Greater Atlantic Regional Fisheries Office by the Northeast Fisheries Science Center.
${ }^{\mathrm{h}}$ The percent of RHL harvested is based on a comparison of the RHL to the previous or old MRIP estimates. The RHLs through 2019 did not account for the new
MRIP estimates; therefore, it would be inappropriate to compare RHLs through 2019 to the revised MRIP estimates.


Figure 3: Commercial and recreational black sea bass landings in millions of pounds from Maine through Cape Hatteras, North Carolina, 1981-2021.

Table 21: Federal black sea bass recreational measures, Maine - Cape Hatteras, NC, 2007 2022.

| Year | Min. size | Bag limit | Open season |
| :---: | :---: | :---: | :---: |
| $2007-2008$ | $12 "$ | 25 | Jan 1 - Dec 31 |
| 2009 | $12.5 "$ | 25 | Jan 1 - Oct 5 |
| $2010-2011$ | $12.5 "$ | 25 | May 22 - Oct 11; Nov 1 - Dec 31 |
| 2012 | $12.5 "$ | 25 | May 19 - Oct 14; Nov 1 - Dec 31 |
| 2013 | $12.5 "$ | 20 | Jan 1 - Feb 28; May 19 - Oct 14; Nov 1 - Dec 31 |
| 2014 | $12.5 "$ | 15 | May 19 - Sept 18; Oct 18 - Dec 31 |
| $2015-2017$ | $12.5 "$ | 15 | May 15 - Sept 21; Oct 22 - Dec 31 |
| $2018-2021$ | $12.5 "$ | 15 | Feb 1 - 28; May 15 - Dec 31 |
| 2022 | Federal waters measures waived in favor of state measures |  |  |

Table 22: State waters black sea bass recreational measures in 2018-2021. The only changes made during these years were to maintain a Saturday opening (Massachusetts) or to account for harvest in the February opening (Virginia and North Carolina).

| State | Min. <br> Size | Bag <br> Limit | Open Season |
| :---: | :---: | :---: | :---: |
| Maine | $13 "$ | 10 | May 19 - Sept 21; Oct 18 - Dec 31 |
| New Hampshire | $13 "$ | 10 | Jan 1 - Dec 31 |
| Massachusetts | 2018: May 19 - Sept 12 |  |  |
| Rhode Island |  | 2019 \& 2020: May 18 - Sept 8 |  |
| 2021: May 18 - Sept 8 |  |  |

Table 23: State waters black sea bass recreational measures in 2022.


Table 24: Estimated recreational black sea bass catch (harvest and live and dead discards) and harvest from Maine through Cape Hatteras, North Carolina, 2012-2021.

| Year | Catch <br> (millions of fish) | Harvest <br> (millions of fish) | Harvest <br> (millions of pounds) | \% of catch <br> retained |
| :---: | :---: | :---: | :---: | :---: |
| 2012 | 34.95 | 3.69 | 7.04 | $11 \%$ |
| 2013 | 25.78 | 3.02 | 5.69 | $12 \%$ |
| 2014 | 23.91 | 3.97 | 7.24 | $17 \%$ |
| 2015 | 24.11 | 4.94 | 9.06 | $20 \%$ |
| 2016 | 35.81 | 5.84 | 12.05 | $16 \%$ |
| 2017 | 41.19 | 5.70 | 11.50 | $14 \%$ |
| 2018 | 24.99 | 3.99 | 7.92 | $16 \%$ |
| 2019 | 32.32 | 4.38 | 8.61 | $14 \%$ |
| 2020 | 34.11 | 4.23 | 9.05 | $12 \%$ |
| 2021 | 42.67 | 6.44 | 11.97 | $15 \%$ |

Table 25: Estimated percentage of black sea bass recreational harvest (in numbers of fish) in state and federal waters, from Maine through Cape Hatteras, North Carolina, 2012-2021.

| Year | State waters | Federal waters |
| :---: | :---: | :---: |
| 2012 | $71 \%$ | $29 \%$ |
| 2013 | $69 \%$ | $31 \%$ |
| 2014 | $72 \%$ | $28 \%$ |
| 2015 | $73 \%$ | $27 \%$ |
| 2016 | $61 \%$ | $39 \%$ |
| 2017 | $42 \%$ | $58 \%$ |
| 2018 | $61 \%$ | $39 \%$ |
| 2019 | $64 \%$ | $36 \%$ |
| 2020 | $57 \%$ | $43 \%$ |
| 2021 | $52 \%$ | $48 \%$ |
| $2012-2021$ avg | $62 \%$ | $38 \%$ |

Table 26: State-by-state contribution to total recreational harvest of black sea bass (in number of fish), Maine through Cape Hatteras, North Carolina, 2019-2021.

| State | $\mathbf{2 0 1 9}$ | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 1}$ | $\mathbf{2 0 1 9 - 2 0 2 1}$ average |
| :---: | :---: | :---: | :---: | :---: |
| Maine | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ |
| New Hampshire | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ |
| Massachusetts | $12.0 \%$ | $13.6 \%$ | $18.8 \%$ | $14.8 \%$ |
| Rhode Island | $11.8 \%$ | $14.6 \%$ | $7.9 \%$ | $11.4 \%$ |
| Connecticut | $11.8 \%$ | $9.6 \%$ | $13.0 \%$ | $11.5 \%$ |
| New York | $36.0 \%$ | $30.1 \%$ | $14.4 \%$ | $26.9 \%$ |
| New Jersey | $19.0 \%$ | $19.2 \%$ | $30.0 \%$ | $22.7 \%$ |
| Delaware | $1.0 \%$ | $3.3 \%$ | $5.5 \%$ | $3.3 \%$ |
| Maryland | $3.0 \%$ | $1.9 \%$ | $3.3 \%$ | $2.7 \%$ |
| Virginia | $5.3 \%$ | $6.5 \%$ | $6.9 \%$ | $6.2 \%$ |
| North Carolina | $0.1 \%$ | $1.1 \%$ | $0.1 \%$ | $0.4 \%$ |

Table 27: Percent of total recreational black sea bass harvest (in numbers of fish) by recreational fishing mode, Maine through North Carolina, 2012-2021.

| Year | Shore | Party/charter | Private/rental | Total number of fish <br> (millions) |
| :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 1 2}$ | $1 \%$ | $19 \%$ | $80 \%$ | 3.82 |
| $\mathbf{2 0 1 3}$ | $2 \%$ | $9 \%$ | $89 \%$ | 3.10 |
| $\mathbf{2 0 1 4}$ | $3 \%$ | $18 \%$ | $79 \%$ | 4.31 |
| $\mathbf{2 0 1 5}$ | $0 \%$ | $20 \%$ | $79 \%$ | 5.26 |
| $\mathbf{2 0 1 6}$ | $4 \%$ | $8 \%$ | $88 \%$ | 6.03 |
| $\mathbf{2 0 1 7}$ | $1 \%$ | $9 \%$ | $90 \%$ | 6.00 |
| $\mathbf{2 0 1 8}$ | $2 \%$ | $12 \%$ | $86 \%$ | 4.07 |
| $\mathbf{2 0 1 9}$ | $3 \%$ | $17 \%$ | $79 \%$ | 4.52 |
| $\mathbf{2 0 2 0}$ | $2 \%$ | $11 \%$ | $87 \%$ | 4.32 |
| $\mathbf{2 0 2 1}$ | $4 \%$ | $12 \%$ | $84 \%$ | 6.48 |
| $\mathbf{2 0 1 2 - 2 0 2 1} \mathbf{~ a v g}$ | $\mathbf{2 \%}$ | $\mathbf{1 4 \%}$ | $\mathbf{8 4 \%}$ | $\mathbf{4 . 7 9}$ |

${ }^{\text {a }}$ Party and charter fishing was restricted in all states for part of 2020 due to the COVID-19 pandemic.

### 6.1.4 Bluefish Recreational Fisheries

Recreational and commercial bluefish landings relative to specified management measures through 2022 are provided in Table 28. In 2021, MRIP reported the recreational fishery landed 12.46 million pounds compared to the 8.34 million pounds RHL. In 2021, the commercial fishery landed 2.07 million pounds compared to the 2.77-million-pound quota.
Trends in recreational trips associated with targeting or harvesting bluefish from 2012 to 2021 are provided in Table 29. During 2012-2021, the lowest annual estimate of bluefish trips was 7.17 million (2018) and the highest annual estimate of bluefish trips was 12.82 million in 2012. During 2017-2021, the number of bluefish trips averaged 8.95 million trips.
From the early 1980s to the early 1990s, recreational landings declined about 70\% (avg. 1981$1983=156.34$ million pounds; avg. 1991-1993 $=46.14$ million pounds). Recreational landings continued to decline at a slower rate until reaching a low level in 1999-2000 but have since increased to a peak of over 46 million pounds in 2010. Since 2018, recreational landings have dropped to the lowest values of the time series with a 2018-2021 average harvest of 13.72 million pounds. From 2000 to 2010 landings were relatively stable, however, recreational landings have been trending downward since 2010 (Figure 4).
Recreational catch and harvest by state for 2021 are provided in Table 30. The greatest catches (includes discards) occurred in Florida with 13.88 million fish, followed by North Carolina with 4.52 million fish, and New York and New Jersey with over 2 million fish.

The greatest harvest of bluefish by weight in 2021 occurred in Florida with 3.55 million pounds, followed by New Jersey with 3.36 million pounds, New York with 2.35 million pounds and North Carolina with just over 1 million pounds. Average weights, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase along the north Atlantic coast.
Most bluefish recreational landings are in the shore and private/rental boat modes. The shore mode represented $66 \%$ of recreational harvest in 2021, followed by private rental mode at $29 \%$ and the for-hire sector at $6 \%$ (Figure 5). In 2021, 926 federal for-hire permits were issued for bluefish.

During 2017-2021, $96 \%$ of recreational bluefish harvest came from state waters and $4 \%$ from federal waters.
In the recreational fishery, bluefish released alive (B2) are estimated by MRIP. To calculate discard mortality ${ }^{17}$, a $15 \%$ mortality rate is applied to the B 2 value. In 2021, there were 3.53 million bluefish dead discards, which represents a slight increase compared with 3.20 million fish in 2020 however there is an overall downward trend from the 2001 peak of 6.37 million bluefish dead discards (Figure 6).

[^13]Table 28: Summary of bluefish catch, harvest, and management measures, 2013-2022 (Values are in millions of pounds). In 2019, recreational landings were provided using new MRIP estimates while the RHL was developed using old MRIP estimates so cannot be directly compared. In 2020 onward, the new MRIP estimates were used in setting the RHL and estimating catch and landings.

| Management Measures | $\mathbf{2 0 1 3}$ | $\mathbf{2 0 1 4}$ | $\mathbf{2 0 1 5}$ | $\mathbf{2 0 1 6}$ | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 8}$ | $\mathbf{2 0 1 9}$ | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 1}$ | $\mathbf{2 0 2 2}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ABC | 27.47 | 24.43 | 21.54 | 19.45 | 20.64 | 21.81 | 21.81 | 16.28 | 16.28 | 25.26 |
| TAL | 23.86 | 21.08 | 18.19 | 16.46 | 18.19 | 18.82 | 19.33 | 12.25 | 12.25 | 17.43 |
| Comm. Quota | 9.08 | 7.46 | 5.24 | 4.88 | 8.54 | 7.24 | 7.71 | 2.77 | 2.77 | 3.54 |
| Comm. Landings ${ }^{1}$ | 4.12 | 4.77 | 4.02 | 4.1 | 3.64 | 2.20 | 2.78 | 2.16 | 2.07 | -- |
| Rec. Harvest Limit | 14.07 | 13.62 | 12.95 | 11.58 | 9.65 | 11.58 | 11.62 | 9.48 | 8.34 | 13.89 |
| Rec. Harvest, Old MRIP | 16.46 | 10.46 | 11.67 | 9.54 | 9.52 | 3.64 | -- | -- | -- | -- |
| Rec. Harvest, New MRIP | 34.40 | 27.04 | 30.10 | 24.16 | 32.07 | 13.27 | 15.56 | 13.58 | 12.46 | -- |
| Rec. Possession Limit | 15 | 15 | 15 | 15 | 15 | 15 | 15 | $3:$ Private <br> 5: For-Hire | 3: Private <br> 5: For-Hire | 3: Private <br> 5: For-Hire |
| Total Landings | 20.58 | 15.23 | 15.69 | 13.64 | 13.16 | 5.84 | 18.34 | 15.74 | 14.53 | -- |
| Overage/Underage | -3.28 | -5.85 | -2.5 | -2.82 | -5.03 | -12.98 | $\mathrm{~N} / \mathrm{A}^{*}$ | +3.49 | +2.28 | -- |
| Total Catch |  |  |  |  |  |  |  |  |  |  |
| Overage/Underage | 24.06 | 17.96 | 18.65 | 16.09 | 15.65 | 6.96 | 23.50 | 19.93 | $21.25^{3}$ | -- |

${ }^{1}$ Dealer data (cfders) was used to generate commercial landings. ${ }^{2}$ Recreational discards were calculated assuming MRIP mean weight of fish harvested by state in a given year multiplied by the MRIP B2s and assumed discard mortality rate of $15 \% .{ }^{3}$ A previous version of this document reported a lower catch value due to a calculation error, 2021 catch data are preliminary.

Table 29: Number of bluefish recreational fishing trips, landings per trip, harvest, catch and releases, 2012-2021, ME-FL.

| Year | Trips | Landings/ <br> trip | Harvest <br> (Numbers) | Harvest <br> (lbs) | Released <br> (Numbers) | Catch <br> (Numbers) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 1 2}$ | $12,817,838$ | 1.45 | $18,578,838$ | $32,530,917$ | $32,079,529$ | $50,658,367$ |
| $\mathbf{2 0 1 3}$ | $9,353,805$ | 2.14 | $19,975,051$ | $34,398,327$ | $33,519,613$ | $53,494,664$ |
| $\mathbf{2 0 1 4}$ | $12,441,771$ | 1.73 | $21,510,651$ | $27,044,276$ | $33,583,115$ | $55,093,766$ |
| $\mathbf{2 0 1 5}$ | $9,406,704$ | 1.46 | $13,725,106$ | $30,098,649$ | $28,423,854$ | $42,148,960$ |
| $\mathbf{2 0 1 6}$ | $10,626,957$ | 1.40 | $14,899,723$ | $24,155,304$ | $27,629,023$ | $42,528,746$ |
| $\mathbf{2 0 1 7}$ | $9,952,090$ | 1.39 | $13,845,806$ | $32,071,432$ | $28,317,327$ | $42,163,133$ |
| $\mathbf{2 0 1 8}$ | $7,169,536$ | 1.43 | $10,245,710$ | $13,270,862$ | $20,682,992$ | $30,928,703$ |
| $\mathbf{2 0 1 9}$ | $8,250,853$ | 1.47 | $12,137,290$ | $15,555,889$ | $26,494,646$ | $38,631,936$ |
| $\mathbf{2 0 2 0}$ | $8,745,993$ | 1.07 | $9,336,222$ | $13,581,218$ | $21,345,604$ | $30,681,826$ |
| $\mathbf{2 0 2 1}$ | $7,409,375$ | 0.83 | $6,183,783$ | $12,462,781$ | $23,566,217$ | $29,750,000$ |

${ }^{1}$ Estimated number of trips where the primary target was bluefish or bluefish were harvested regardless of target
Table 30: MRIP estimates of 2021 bluefish recreational harvest, total catch, and average weight. Average weight is the pounds harvested divided by the number of fish harvested. Recreational dead discards are calculated as $15 \%$ of total recreational discards.

| State | Harvest |  |  | Total <br> Released | Dead <br> Discards |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pounds | Number | Avg. Weight (lb) | Number | Number |
| ME | 3,633 | 673 | 5.4 | 5,431 | 815 |
| NH | 3,796 | 698 | 5.4 | - | - |
| MA | 833,962 | 116,547 | 7.2 | 738,494 | 110,774 |
| RI | 718,950 | 140,504 | 5.1 | 633,905 | 95,086 |
| CT | 206,429 | 263,966 | 0.8 | 916,126 | 137,419 |
| NY | $2,353,527$ | 861,060 | 2.7 | $2,704,607$ | 405,691 |
| NJ | $3,357,809$ | 921,667 | 3.6 | $1,973,341$ | 296,001 |
| DE | 8,460 | 14,019 | 0.6 | 165,543 | 24,831 |
| MD | 117,545 | 105,711 | 1.1 | 211,238 | 31,686 |
| VA | 153,199 | 216,317 | 0.7 | 503,487 | 75,523 |
| NC | $1,031,761$ | 982,391 | 1.1 | $3,539,333$ | 530,900 |
| SC | 107,268 | 172,528 | 0.6 | 550,004 | 82,501 |
| GA | 12,870 | 13,811 | 0.9 | 122,777 | 18,417 |
| FL | $3,553,572$ | $2,373,891$ | 1.5 | $11,501,931$ | $1,725,290$ |
| Total | $12,462,781$ | $6,183,783$ | - | $23,566,217$ | $3,534,932$ |

Bluefish Total Catch 2000 to 2021


Figure 4: Bluefish catch (landings and dead discards), 2000-2021. Recreational dead discards are calculated as the average weight of a harvested fish by year and state multiplied by the B2s and $15 \%$ discard mortality rate (Source: MRIP and Dealer data - cfders). Commercial discards are thought to be negligible.


Figure 5: Bluefish recreational harvest (pounds) by mode on the Atlantic Coast, 2000-2021.


Figure 6: Bluefish dead discards in numbers of fish (all areas and modes combined) from 19912021. Fish released alive (B2) are assumed to have a $15 \%$ mortality rate.

### 6.2 Summer flounder, Scup, Black Sea Bass, and Bluefish Stocks

The following sections summarize the biology, life history, and stock status of the summer flounder, scup, black sea bass, and bluefish stocks. Stock status is based on the most recent stock assessment information.

### 6.2.1 Summer Flounder

Summer flounder are a demersal flatfish found in pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas. Spawning occurs during the fall and winter over the open ocean over the continental shelf. Larvae and postlarvae are transported toward coastal areas by prevailing water currents, entering coastal and estuarine nursery areas.
Development of post larvae and juveniles occurs primarily within bays and estuarine areas. Adult summer flounder exhibit strong seasonal inshore-offshore movements, normally inhabiting shallow coastal and estuarine waters during the warmer months of the year and remaining offshore during the colder months. Most fish are sexually mature by age 2 . Summer flounder exhibit sexual dimorphism by size; most of the largest fish are females. Recent Northeast Fisheries Science Center (NEFSC) trawl survey data indicate that while female summer flounder grow faster (reaching a larger size at the same age), the sexes attain about the same maximum age (currently age 16 at 56 cm and 60 cm for males, and age 15 at 72 cm for females). Unsexed commercial fishery samples currently indicate a maximum age of 17 for an 72 cm fish (likely a female) and 20 for a 57 cm fish (likely a male; M. Terceiro, personal communication, May 2022).

Summer flounder are opportunistic feeders; their prey includes a variety of fish and crustaceans. While the predators of adult summer flounder are not fully documented, larger predators such as large sharks, rays, and monkfish probably include summer flounder in their diets (Packer et al. 1999).

In June 2021, the NEFSC provided a management track assessment update for summer flounder with data through 2019 (NEFSC 2021a). The update adds two additional years of data to the model developed for the most recent benchmark stock assessment, which was developed through the $66^{\text {th }}$ SAW/SARC in 2018 using data through 2017 (NEFSC 2019). The 2018 assessment incorporated the revised time series of recreational catch from MRIP, which is $30 \%$ higher on average compared to the previous summer flounder estimates for 1981-2017. While fishing mortality rates were not strongly affected by incorporating these revisions, increased recreational catch resulted in increased estimates of stock size compared to past assessments.
The 2021 management track assessment update made minor revisions to the biological reference points for spawning stock biomass and fishing mortality. Assessment update results indicate that the summer flounder stock was not overfished and overfishing was not occurring in 2019. SSB has generally decreased since 2003 and was estimated to be 104.49 million $\mathrm{lb}(47,397 \mathrm{mt})$ in 2019 , about $86 \%$ of the updated biomass target reference point SSB $_{\text {MSY }}$ proxy $=121.73$ million $\mathrm{lb}(55,217 \mathrm{mt})$. This estimate is $72 \%$ above the overfished threshold of $1 / 2$ SSB $_{\text {MSY }}$ proxy $=1 / 2$ $\mathrm{SSB}_{35 \%}=60.87$ million lb ( $27,609 \mathrm{mt}$; Figure 7). There is a $90 \%$ chance that SSB in 2019 was between 42,000 and 54,000 mt.

Fishing mortality on the fully selected age 4 fish ranged between 0.746 and 1.624 during 19821996 and then decreased to 0.245 in 2007. Since 2007 the fishing mortality rate has increased, and in 2019 was estimated at $0.340,81 \%$ of the updated fishing mortality threshold reference point ( $\mathrm{F}_{\text {MSY }}$ proxy $=\mathrm{F}_{35 \%}=0.422$; Figure 8 ). There is a $90 \%$ probability that the fishing mortality rate in 2019 was between 0.280 and 0.396 .

The average recruitment from 1982 to 2019 is 53 million fish at age 0 . Recruitment of juvenile summer flounder was below-average from 2011-2017, ranging from 31 to 45 million fish and averaging 36 million fish. The driving factors behind this period of below average recruitment have not been identified. The 2018 year class is above average at an estimated 61 million fish, which is the largest recruitment estimate since 2009, while the 2019 year class is below average at 49 million fish.

A management track assessment is anticipated to be available in the summer of 2023, which will incorporate the most recent data available and will provide outputs for use in management. Updated summer flounder management track assessments are expected to be available every other year.

Spawning Stock Biomass (SSB) and Recruitment (R)


Figure 7. Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars),1982-2019. The horizontal dashed line is the updated target biomass reference point. The horizontal solid line is the updated threshold biomass reference point.

Total Catch and Fishing Mortality (F)


Figure 8. Total fishery catch (metric tons; mt; solid line) and fully-recruited fishing mortality (F, peak at age 4; squares) of summer flounder, 1982-2019. The horizontal solid line is the updated fishing mortality reference point.

### 6.2.2 Scup

Scup are a schooling, demersal (i.e., bottom-dwelling) species. They are found in a variety of habitats in the Mid-Atlantic. Scup EFH includes demersal waters, areas with sandy or muddy bottoms, mussel beds, and sea grass beds from the Gulf of Maine through Cape Hatteras, North Carolina. Scup undertake extensive seasonal migrations between coastal and offshore waters. They are mostly found in estuaries and coastal waters during the spring and summer. Larger individuals tend to arrive in inshore areas in the spring before smaller individuals. They move offshore and to the south, to outer continental shelf waters south of New Jersey in the fall and winter (Steimle et al. 1999, NEFSC 2015).

About $50 \%$ of scup are sexually mature at two years of age and about 17 cm (about 7 inches) total length. Nearly all scup older than three years of age are sexually mature. Scup reach a maximum age of at least 14 years. They may live as long as 20 years; however, few scup older than 7 years are caught in the Mid-Atlantic (Steimle et al. 1999, NEFSC 2015).
Adult scup are benthic feeders. They consume a variety of prey, including small crustaceans (including zooplankton), polychaetes, mollusks, small squid, vegetable detritus, insect larvae, hydroids, sand dollars, and small fish. The NEFSC's food habits database lists several predators of scup, including several shark species, skates, silver hake, bluefish, summer flounder, black sea bass, weakfish, lizardfish, king mackerel, and monkfish (Steimle et al. 1999).
A scup management track stock assessment was peer reviewed and accepted in June 2021. This assessment retained the model structure of the previous benchmark stock assessment, completed in 2015, and incorporated fishery catch and fishery-independent survey data through 2019. The following information is based on the prepublication draft of the July 2021 management track assessment prepared for use by the Council and SSC (NEFSC 2021b).
The updated fishing mortality reference point is $\mathrm{F}_{\text {MSY }}$ proxy $=\mathrm{F}_{40} \%=0.200$ and the updated biomass reference point is $\mathrm{SSB}_{\text {msy }}$ proxy $=\mathrm{SSB}_{40 \%}=198.458$ million pounds $(90,019 \mathrm{mt})$. The minimum biomass threshold of $1 / 2 \mathrm{SSB}_{\text {msy }}$ proxy $=1 / 2 \mathrm{SSB}_{40 \%}=99.230$ million pounds $(45,010$ mt ).

According to the 2021 assessment, the scup stock north of Cape Hatteras, North Carolina extending north to the US-Canada border was not overfished and overfishing was not occurring in 2019. Spawning stock biomass (SSB) was estimated to be about 389 million pounds ( 176,404 mt ) in 2019 , about 2 times the SSB $_{\text {Msy }}$ proxy reference point of 198.458 million pounds $(90,019$ mt , Figure 9), meaning that the stock was not overfished in 2019. Fishing mortality on fully selected age 4 scup was 0.136 in 2019 , about $68 \%$ of the F MSY proxy reference point of $0.200^{2}$ (Figure 10), meaning that overfishing was not occurring in 2019. The 2015 year class is estimated to be the largest in the time series at 415 million fish, while the 2017-2019 year classes are estimated to be below average, with the 2019 year class as the smallest in the time series (Figure 9).
A management track assessment is anticipated to be available in the summer of 2023, which will incorporate the most recent data available and will provide outputs for use in management. Updated scup management track assessments are expected to be available every other year.


Figure 9. Scup SSB and recruitment at age 0, 1984-2019 from the 2021 management track stock assessment (NEFSC 2021b).

Total Catch and Fishing Mortality


Figure 10. Scup total catch and fishing mortality, 1984-2019 from the 2021 management track stock assessment (NEFSC 2021b).

### 6.2.3 Black Sea Bass

Black sea bass are distributed from the Gulf of Maine through the Gulf of Mexico. Genetic studies have identified three stocks within that range. The northern stock is found from the Gulf of Maine through Cape Hatteras, North Carolina and is the focus of the black sea bass sections of this document. The stocks in the South Atlantic and Gulf of Mexico are not managed by the Commission and Mid-Atlantic Council.

Adult and juvenile black sea bass are mostly found on the continental shelf. Young of the year (i.e., fish less than one year old) can be found in estuaries. Adults show strong site fidelity during
the summer and prefer to be near structures such as rocky reefs, coral patches, cobble and rock fields, mussel beds, and shipwrecks.

Black sea bass migrate to offshore wintering areas starting in the fall. During the winter, young of the year are distributed across the shelf and adults and juveniles are found near the shelf edge. During the fall, adults and juveniles off New York and north move offshore and travel along the shelf edge to as far south as Virginia. Most return to northern inshore areas by May. Black sea bass off New Jersey to Maryland travel southeast to the shelf edge during the late fall. Black sea bass off Virginia and Maryland travel a shorter distance due east to the shelf edge, which is closer to shore than in areas to the north (Drohan et al. 2007, NEFSC 2017).

Black sea bass are protogynous hermaphrodites, meaning they are born female and some later transition to males, usually around 2-5 years of age. Male black sea bass are either of the dominant or subordinate type. Dominant males are larger than subordinate males and develop a bright blue nuccal hump during the spawning season. About $25 \%$ of black sea bass are male at 15 cm (about 6 inches), with increasing proportions of males at larger sizes until about 50 cm , when about $70-80 \%$ of black sea bass are male. Results from a simulation model highlight the importance of subordinate males in the spawning success of this species. This increases the resiliency of the population to exploitation compared to other species with a more typical protogynous life history. About half of black sea bass are sexually mature by 2 years of age and 21 cm (about 8 inches) in length. Black sea bass reach a maximum size of about 60 cm (about 24 inches) and a maximum age of about 12 years (NEFSC 2017, Blaylock and Shepherd 2016).
Black sea bass in the mid-Atlantic spawn in nearshore continental shelf areas at depths of 20-50 meters. Spawning usually takes place between April and October. During the summer, adult black sea bass share habitats with tautog, hakes, conger eel, sea robins and other migratory fish species. Essential fish habitat for black sea bass consists of pelagic waters, structured habitat, rough bottom, shellfish, sand, and shell, from the Gulf of Maine through Cape Hatteras, North Carolina. Juvenile and adult black sea bass mostly feed on crustaceans, small fish, and squid. The NEFSC food habits database lists spiny dogfish, Atlantic angel shark, skates, spotted hake, summer flounder, windowpane flounder, and monkfish as predators of black sea bass (Drohan et al. 2007).

A black sea bass management track stock assessment was peer reviewed and accepted in June 2021 (NEFSC 2021c). This assessment found that the black sea bass stock north of Cape Hatteras, North Carolina was not overfished and overfishing was not occurring in 2019 compared to revised reference points. Spawning stock biomass in 2019 was 65.63 million pounds ( $29,769 \mathrm{mt}$, adjusted for retrospective bias), 2.1 times the updated biomass reference point (i.e., $\mathrm{SSB}_{\mathrm{MSY}}$ proxy $=\mathrm{SSB}_{40 \%}=31.84$ million pounds $/ 14,441 \mathrm{mt}$; Figure 11). The median fishing mortality rate on fully selected ages 6-7 fish in 2019 was 0.39 (adjusted for retrospective bias), $85 \%$ of the updated fishing mortality threshold reference point (i.e., $\mathrm{F}_{\mathrm{MSY}}$ proxy $=\mathrm{F}_{40 \%}=$ 0.46 ; Figure 12).

The 2011 year class was estimated to be the largest in the time series at 170.4 million fish. The 2015 year class was the second largest at 93.8 million fish. Recruitment of the 2017 year class as age 1 in 2018 was estimated at 14.9 million, well below the 1989-2019 average of 39 million fish. However, the 2018 year class was above average at an estimated 46.2 million fish ( 79.4 million with the retrospective adjustment) at age 1 in 2019 (Figure 11; NEFSC 2021c).

A black sea bass research track stock assessment is currently in development and is expected to be peer reviewed in February 2023. The research track assessment is not intended to provide outputs that will be used directly in management. Rather, the research track assessment model will be used in a management track assessment in the summer of 2023, which will incorporate the most recent data available and will provide outputs for use in management. Updated black sea bass management track assessments are expected to be available every other year.


Figure 11. Black sea bass spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) by calendar year. The horizontal dashed line is the updated $\mathrm{SSB}_{\text {MSY }}$ proxy $=$ $\mathrm{SSB}_{40 \%}=14,441 \mathrm{mt}$. Note that SSB and recruitment estimates were adjusted for a retrospective pattern in the stock assessment (shown as retro adj SSC and retro adj R). The adjusted SSB value is compared against the SSBMSY proxy reference point. Source: NEFSC, personal communication.


Figure 12. Total fishery catch (metric tons; mt; solid line) and fishing mortality ( F , peak at age $6-7$; squares) for black sea bass. The horizontal dashed line is the updated Fmsy proxy $=\mathrm{F} 40 \%=$ 0.46 . The red square Is the retrospectively adjusted fishing mortality value for 2019. Source: NEFSC 2021c.

### 6.2.4 Bluefish

Bluefish are found worldwide in tropical and subtropical waters. In the western North Atlantic they range from Nova Scotia to Bermuda to Argentina. Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the Middle Atlantic Bight during spring and then south or farther offshore during fall. Within the Middle Atlantic Bight they occur in large bays and estuaries as well as across the entire continental shelf. Juvenile stages have been recorded in all estuaries within the Middle Atlantic Bight, but eggs and larvae occur in oceanic waters (Able and Fahay 1998). Bluefish have fast growth rates and reach lengths of 3.5 feet and can weigh up to 27 pounds (Bigelow and Schroeder 1953). Bluefish live to age 12 and greater (Salerno et al. 2001).
Bluefish eat a wide variety of prey items. They have been described by Bigelow and Schroeder (1953) as "perhaps the most ferocious and bloodthirsty fish in the sea, leaving in its wake a trail of dead and mangled mackerel, menhaden, herring, alewives, and other species on which it preys."

Bluefish born in a given year (young of the year) typically fall into two distinct size classes suggesting that there are two spawning events along the east coast. Studies suggest, however, that spawning is a single, continuous event, but that young are lost from the middle portion resulting in the appearance of a split season (Smith et al. 1994). As a result of the bimodal size distribution, young are referred to as spring-spawned or summer-spawned. In the Middle Atlantic Bight, spring-spawned bluefish appear to be the dominant component of the stock.
In June 2021, a bluefish management track assessment, which included data through 2019 indicated the bluefish stock is overfished and overfishing is not occurring (Figure 13, Figure 14).

This update builds upon the 2019 operational assessment with data through 2018 that first indicated the stock was overfished and overfishing was not occurring.
The biological reference points for bluefish revised through the 2021 management track assessment include an updated fishing mortality threshold of $\mathrm{F}_{\text {MSY }}=\mathrm{F}_{35 \%}$ (as the $\mathrm{F}_{\text {MSY }}$ proxy) $=$ 0.181 , and a biomass reference point of $\mathrm{SSB}_{\text {MSY }}=\mathrm{SSB}_{35 \%}\left(\right.$ as the $\mathrm{SSB}_{\text {MSY }}$ proxy $)=444.74$ million pounds. The minimum stock size threshold ( $1 / 2 \mathrm{SSB}_{\mathrm{MSY}}$ ) is estimated to be 222.37 million pounds.
Spawning stock biomass (SSB) was estimated to be 211.07 million pounds ( 95,742 MT) in 2019 , about $47.5 \%$ of the updated SSB $_{\text {MSY }}$ proxy and $95 \%$ of the updated minimum stock size threshold (Figure 13). There is a $90 \%$ probability that SSB in 2019 was between 163.12 and 231.82 million pounds ( 73,992 and $105,151 \mathrm{MT}$ )

Fishing mortality on the fully selected age 2 fish was estimated to be 0.172 in 2019, $95 \%$ of the updated fishing mortality threshold reference point $\mathrm{F}_{\text {MSY }}$ proxy $=\mathrm{F} 35 \%=0.181$. There is a $90 \%$ probability that the fishing mortality rate in 2019 was between 0.140 and 0.230 .
The 2021 management track assessment indicated the bluefish stock has experienced a decline in SSB over the past decade, coinciding with an increasing trend in F. Recruitment has remained fairly steady, fluctuating just below the time-series mean of 46 million fish (Figure 13, Figure 14). Both commercial and recreational fisheries have had lower catches in recent years. These lower catches are possibly a result of availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery during the past few years.

A bluefish research track stock assessment is currently in development and is expected to be peer reviewed in December 2022. The research track assessment is not intended to provide outputs that will be used directly in management. Rather, the research track assessment model will be used in a management track assessment in the summer of 2023, which will incorporate the most recent data available and will provide outputs for use in management. Updated bluefish management track assessments are expected to be available every other year.

Atlantic bluefish SSB and Recruitment


Figure 13: Recruitment, spawning stock biomass, biomass target (SSBMSY), and biomass threshold defining an overfished state (SSBThresh) from the 2021 management track assessment.

Atlantic bluefish total catch and Fishing Mortality


Figure 14: Bluefish recreational landings, recreational discards, commercial landings, fishing mortality (F), and fishing mortality reference point defining overfishing (FMSY) from the 2021 management track assessment. In the assessment, it is assumed that there are no commercial discards.

### 6.3 Non-Target Species

The following sections describe non-target species in the recreational summer flounder, scup, black sea bass, and bluefish fisheries. Non-target species are those species caught incidentally while targeting other species. Non-target species may be retained or discarded. It can be difficult to develop accurate quantitative estimates of catch of non-target species. The intended target species for any given tow or set is not always obvious. Fishermen may intend to target one or multiple species and the intended target species may change mid-trip. For example, the seasonal
distributions of summer flounder, scup, and black sea bass are generally similar, and these species are often caught together. It is not always clear from the data which species is the primary target, which is a secondary target, and which species are not targeted but are sometimes landed if caught incidentally.
In addition, there are limitations to the data used to examine catch and discards (i.e., observer and vessel trip report [VTR] data). Observer data are available only for commercial fisheries and may not be representative of all fishing activity due to limited coverage, coverage rates which vary by gear type, and potential differences in behavior when observers are present. VTR data are available for commercial and for-hire fisheries. VTR data can be uncertain as they are based on fishermen's self-reported best estimates of catch, which are not intended to be precise measurements. MRIP is the only source of recreational catch and discard data for private recreational anglers participating in the summer flounder, scup, black sea bass, and bluefish fisheries.

A species guild approach was used to examine non-target species interactions in the recreational summer flounder, scup, black sea bass, and bluefish fisheries by identifying species with the strongest associations on recreational trips. The analysis for summer flounder, scup, and black sea bass focused on Maine through Virginia. For bluefish, the data were analyzed in two separate regions (Maine through Virginia and North Carolina through Florida) to more effectively classify species based on region. The Council and NMFS staff working on this document determined that it is not necessary to update this analysis for every relevant Council action. Therefore, the most recent previously completed analysis for each species was used. For summer flounder, scup, and black sea bass, the most recent analysis was completed in early 2022 and used MRIP data from 2017 through October 2021 (2021 data were preliminary). For bluefish, the most recent analysis used data from 2020.

Based on this analysis, sea robins, black sea bass, scup, smooth dogfish, and bluefish were highly correlated with summer flounder in the recreational fishery. Black sea bass, sea robins, summer flounder, bluefish, and tautog were highly correlated with recreational scup catch. Scup, sea robins, summer flounder, bluefish, and tautog where highly correlated with black sea bass recreational catch (J. Brust, personal communication March 2022). In Maine -Virginia, black sea bass, striped bass, and scup were highly correlated with bluefish in the recreational fishery. In North Carolina - Florida, Spanish mackerel, king whiting, and pinfish were highly correlated with bluefish in the recreational fishery (J. Brust, personal communication December 2020).

Based on the most recent stock status information for these species, summer flounder, scup, black sea bass, smooth dogfish, and three of the four assessed regions for tautog are not overfished or experiencing overfishing. Bluefish and the New Jersey/New York Bight region of tautog are overfished, but overfishing is not occurring. Striped bass is overfished and overfishing is occurring. The stock status of northern and striped sea robins, king whiting, and pinfish is unknown as these species have not been assessed. All but the four unassessed species are managed by the Mid-Atlantic Council, South Atlantic Council, Commission, and/or NMFS (Table 31). The stock assessments for all assessed species account for discards and incidental catch in other fisheries. As required by the MSA, management of all Council species includes AMs for ACL overages. AMs consider discards and help mitigate negative impacts from discards.

Table 31. Most recent stock status information for non-target species in the recreational summer flounder, scup, black sea bass, and bluefish fisheries, as well as management body for each species.

| Species | Stock status | Management |
| :--- | :--- | :--- |
| Summer flounder | Not overfished, overfishing not occurring | Mid-Atlantic Council <br> and Commission |
| Scup | Not overfished, overfishing not occurring | Mid-Atlantic Council <br> and Commission |
| Black sea bass | Not overfished, overfishing not occurring | Mid-Atlantic Council <br> and Commission |
| Bluefish | Overfished, overfishing not occurring | Mid-Atlantic Council <br> and Commission |
| Smooth dogfish | Not overfished, overfishing not occurring | NMFS and <br> Commission |
| Tautog $\quad$ MA/RI | Not overfished, overfishing not occurring |  |
| Long Island Sound <br> NJ/New York Bight <br> DE/MD/VA | Not overfished, overfishing not occurring <br> Overfished, overfishing not occurring <br> Not overfished, overfishing not occurring | Commission |
| Striped bass | Overfished, overfishing occurring | Commission |
| Spanish mackerel | Not overfished, overfishing not occurring | South Atlantic Council <br> and Commission |
| Northern sea robin | Unknown (not assessed) | Unmanaged |
| Striped sea robin | Unknown (not assessed) | Unmanaged |
| King whiting | Unknown (not assessed) | Unmanaged |
| Pinfish | Unknown (not assessed) | Unmanaged |

### 6.4 Habitat

The physical, chemical, biological, and geological components of benthic and pelagic environments are important aspects of habitat for marine species and have implications for reproduction, growth, and survival of marine species. The following sections briefly describe key aspects of physical habitats which may be impacted by the alternatives considered in this document. This information is drawn from Stevenson et al. (2004), unless otherwise noted.

### 6.4.1 Physical Environment

Summer flounder, scup, and black sea bass inhabit the northeast U.S. shelf ecosystem, which extends from the coast to the edge of the continental shelf from the Gulf of Maine through Cape Hatteras, including the slope sea offshore to the Gulf Stream. The northeast shelf ecosystem includes the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope (Figure 15).


Figure 15. Northeast U.S. Shelf Ecosystem.

The Gulf of Maine is a semi-enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina.

The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

The continental shelf in this region was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet and the subsequent rise in sea level. Currents and waves have since modified this basic structure.
Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of $5-10 \mathrm{~cm} / \mathrm{s}$ at the surface and 2
$\mathrm{cm} / \mathrm{s}$ or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of $20 \mathrm{~cm} / \mathrm{s}$ that increases to $100 \mathrm{~cm} / \mathrm{s}$ near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope ( $100-200 \mathrm{~m}$ water depth) at the shelf break. Numerous canyons incise the slope and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf; however, the Hudson Shelf Valley is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m , lengths of $10-50 \mathrm{~km}$ and spacing of 2 km . Ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the less physically rigorous conditions.
Sand waves are usually found in patches of 5-10 with heights of about 2 m , lengths of 50-100 m and $1-2 \mathrm{~km}$ between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as $15 \%$ of the inner shelf. They tend to form in large patches and usually have lengths of 3-5 m with heights of $0.5-1 \mathrm{~m}$. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper $50-100 \mathrm{~cm}$ of the sediments within a few hours. Ripples are also found everywhere on the shelf and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about $1-150 \mathrm{~cm}$ and heights of a few centimeters.
Sediments are uniformly distributed over the shelf in this region. A sheet of sand and gravel varying in thickness from $0-10 \mathrm{~m}$ covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf, but is common in the Hudson Shelf Valley. Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine
sediment content increases rapidly at the shelf break, which is sometimes called the "mud line," and sediments are $70-100 \%$ fine on the slope. On the slope, silty sand, silt, and clay predominate (Stevenson et al. 2004).
Greene et al. (2010) identified and described Ecological Marine Units in New England and the Mid-Atlantic based on sediment type, seabed form (a combination of slope and relative depth) ${ }^{18}$, and benthic organisms. According to this classification scheme, the sediment composition off New England and the Mid-Atlantic is about $68 \%$ sand, $26 \%$ gravel, and $6 \%$ silt $/ \mathrm{mud}$. The seafloor is classified as about $52 \%$ flat, $26 \%$ depression, $19 \%$ slope, and $3 \%$ steep.
Artificial reefs are another significant Mid-Atlantic habitat. These localized areas of hard structure were formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). While some of these materials were deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations, or may be behaviorally attracted to the reef structure.

Like all the world's oceans, the western North Atlantic is experiencing changes to the physical environment due to global climate change. These changes include warming temperatures; sea level rise; ocean acidification; changes in stream flow, ocean circulation, and sediment deposition; and increased frequency, intensity, and duration of extreme climate events. These changes in physical habitat can impact the metabolic rate and other biological processes of marine species. As such, these changes have implications for the distribution and productivity of many marine species. Several studies demonstrate that the distribution and productivity of several species in the Mid-Atlantic have changed over time, likely because of changes in physical habitat conditions such as temperature (e.g., Weinberg 2005, Lucey and Nye 2010, Nye et al. 2011, Pinsky et al. 2013, Gaichas et al. 2015).

### 6.4.2 Essential Fish Habitat (EFH)

The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA section 3). The MSA requires that Councils describe and identify EFH for managed species and "minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat" (MSA section 303 (a)(7)).
The broad definition of EFH has led the Mid-Atlantic and the New England Fishery Management Councils to identify EFH throughout most of the Northeast U.S. Shelf Ecosystem, ranging from areas out to the shelf break to wetlands, streams, and rivers. Table 32 summarizes EFH within the affected area of this action for federally-managed species and life stages that are vulnerable to bottom tending fishing gear. EFH maps and text descriptions for these species and life stages can be found at www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

[^14]Table 32. Geographic distributions and habitat characteristics of EFH designations for benthic fish and shellfish species within the affected environment of the action.

| Species | Life Stage | Geographic Area | Depth (meters) | Habitat Type and Description |
| :---: | :---: | :---: | :---: | :---: |
| American plaice | Juveniles | Gulf of Maine and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay | 40-180 | Sub-tidal benthic habitats on mud and sand, also found on gravel and sandy substrates bordering bedrock |
| American plaice | Adults | Gulf of Maine, Georges Bank and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay | 40-300 | Sub-tidal benthic habitats on mud and sand, also gravel and sandy substrates bordering bedrock |
| Atlantic cod | Juveniles | Gulf of Maine, Georges Bank, and Southern New England, including nearshore waters from eastern Maine to Rhode Island and the following estuaries: <br> Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay | Mean high water- $120$ | Structurally-complex intertidal and sub-tidal habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna |
| Atlantic cod | Adults | Gulf of Maine, Georges Bank, Southern New England, and the Mid-Atlantic to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay | 30-160 | Structurally complex sub-tidal hard bottom habitats with gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae, also sandy substrates and along deeper slopes of ledges |
| Atlantic halibut | Juveniles \& Adults | Gulf of Maine, Georges Bank, and continental slope south of Georges Bank | 60-140 and 400-700 on slope | Benthic habitats on sand, gravel, or clay substrates |
| Atlantic sea scallop | Eggs | Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: <br> Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay | 18-110 | Inshore and offshore benthic habitats (see adults) |
| Atlantic sea scallop | Larvae | Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: <br> Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay | No information | Inshore and offshore pelagic and benthic habitats: pelagic larvae ("spat"), settle on variety of hard surfaces, including shells, pebbles, and gravel and to macroalgae and other benthic organisms such as hydroids |
| Atlantic sea scallop | Juveniles | Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: <br> Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay | 18-110 | Benthic habitats initially attached to shells, gravel, and small rocks (pebble, cobble), later freeswimming juveniles found in same habitats as adults |
| Atlantic sea scallop | Adults | Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: | 18-110 | Benthic habitats with sand and gravel substrates |


| Species | Life <br> Stage | Geographic Area | Depth (meters) | Habitat Type and Description |
| :--- | :--- | :--- | :--- | :--- |
|  |  | Passamaquoddy Bay to Sheepscot <br> River, Casco Bay, Great Bay, <br> Massachusetts Bay, and Cape Cod <br> Bay |  |  |
| Atlantic <br> surfclams | Juveniles <br> and <br> adults | Continental shelf from <br> southwestern Gulf of Maine to <br> Cape Hatteras, North Carolina | Surf zone to about <br> 61, abundance low <br> $>38$ | In substrate to depth of 3 ft |


| Species | $\begin{aligned} & \hline \text { Life } \\ & \text { Stage } \\ & \hline \end{aligned}$ | Geographic Area | Depth (meters) | Habitat Type and Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | bays and estuaries in the Gulf of Maine |  |  |
| Little skate | Adults | Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the MidAtlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine | Mean high water- $100$ | Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud |
| Longfin inshore squid | Eggs | Inshore and offshore waters from Georges Bank southward to Cape Hatteras | Generally < 50 | Bottom habitats attached to variety of hard bottom types, macroalgae, sand, and mud |
| Monkfish | Juveniles | Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope | 50-400 in the MidAtlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope | Sub-tidal benthic habitats on a variety of habitats, including hard sand, pebbles, gravel, broken shells, and soft mud, also seek shelter among rocks with attached algae |
| Monkfish | Adults | Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope | 50-400 in the MidAtlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope | Sub-tidal benthic habitats on hard sand, pebbles, gravel, broken shells, and soft mud, but seem to prefer soft sediments, and, like juveniles, utilize the edges of rocky areas for feeding |
| Ocean pout | Eggs | Georges Bank, Gulf of Maine, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine | $<100$ | Sub-tidal hard bottom habitats in sheltered nests, holes, or rocky crevices |
| Ocean pout | Juveniles | Gulf of Maine, on the continental shelf north of Cape May, New Jersey, on the southern portion of Georges Bank, and including certain bays and estuaries in the Gulf of Maine | Mean high water- $120$ | Intertidal and sub-tidal benthic habitats on a wide variety of substrates, including shells, rocks, algae, soft sediments, sand, and gravel |
| Ocean pout | Adults | Gulf of Maine, Georges Bank, on the continental shelf north of Cape May, New Jersey, and including certain bays and estuaries in the Gulf of Maine | 20-140 | Sub-tidal benthic habitats on mud and sand, particularly in association with structure forming habitat types; i.e. shells, gravel, or boulders |
| Ocean quahogs | Juveniles and adults | Continental shelf from southern New England and Georges Bank to Virginia | 9-244 | In substrate to depth of 3 ft |
| Offshore hake | Juveniles | Outer continental shelf and slope from Georges Bank to $34^{\circ} 40^{\prime} \mathrm{N}$ | 160-750 | Pelagic and benthic habitats |
| Offshore hake | Adults | Outer continental shelf and slope from Georges Bank to $34^{\circ} 40^{\prime} \mathrm{N}$ | 200-750 | Pelagic and benthic habitats |
| Pollock | Juveniles | Inshore and offshore waters in the Gulf of Maine (including bays and estuaries in the Gulf of Maine), the Great South Channel, Long Island Sound, and Narragansett Bay, Rhode Island | Mean high water180 in Gulf of Maine, Long Island Sound, and Narragansett Bay; 40-180 on Georges Bank | Intertidal and sub-tidal pelagic and benthic rocky bottom habitats with attached macroalgae, small juveniles in eelgrass beds, older juveniles move into deeper water habitats also occupied by adults |
| Pollock | Adults | Offshore Gulf of Maine waters, Massachusetts Bay and Cape Cod Bay, on the southern edge of Georges Bank, and in Long Island Sound | 80-300 in Gulf of Maine and on Georges Bank; <80 in Long Island Sound, Cape Cod | Pelagic and benthic habitats on the tops and edges of offshore banks and shoals with mixed rocky substrates, often with attached macro algae |


| Species | $\begin{aligned} & \hline \text { Life } \\ & \text { Stage } \end{aligned}$ | Geographic Area | Depth (meters) | Habitat Type and Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Bay, and <br> Narragansett Bay |  |
| Red hake | Juveniles | Gulf of Maine, Georges Bank, and the Mid-Atlantic, including Passamaquoddy Bay to Cape Cod Bay in the Gulf of Maine, Buzzards Bay and Narragansett Bay, Long Island Sound, Raritan Bay and the Hudson River, and lower Chesapeake Bay | Mean high water-80 | Intertidal and sub-tidal soft bottom habitats, esp those that that provide shelter, such as depressions in muddy substrates, eelgrass, macroalgae, shells, anemone and polychaete tubes, on artificial reefs, and in live bivalves (e.g., scallops) |
| Red hake | Adults | In the Gulf of Maine, the Great South Channel, and on the outer continental shelf and slope from Georges Bank to North Carolina , including inshore bays and estuaries as far south as Chesapeake Bay | $50-750$ on shelf and slope, as shallow as 20 inshore | Sub-tidal benthic habitats in shell beds, on soft sediments (usually in depressions), also found on gravel and hard bottom and artificial reefs |
| Rosette skate | Juveniles and adults | Outer continental shelf from approximately $40^{\circ} \mathrm{N}$ to Cape Hatteras, North Carolina | 80-400 | Benthic habitats with mud and sand substrates |
| Scup | Juveniles | Continental shelf between southwestern Gulf of Maine and Cape Hatteras, North Carolina and in nearshore and estuarine waters between Massachusetts and Virginia | No information | Benthic habitats, in association with inshore sand and mud substrates, mussel and eelgrass beds |
| Scup | Adults | Continental shelf and nearshore and estuarine waters between southwestern Gulf of Maine and Cape Hatteras, North Carolina | No information, generally overwinter offshore | Benthic habitats |
| Silver hake | Juveniles | Gulf of Maine, including certain bays and estuaries, and on the continental shelf as far south as Cape May, New Jersey | 40-400 in Gulf of <br> Maine, >10 in MidAtlantic | Pelagic and sandy sub-tidal benthic habitats in association with sandwaves, flat sand with amphipod tubes, shells, and in biogenic depressions |
| Silver hake | Adults | Gulf of Maine, including certain bays and estuaries, the southern portion of Georges Bank, and the outer continental shelf and some shallower coastal locations in the Mid-Atlantic | $>35$ in Gulf of Maine, 70-400 on Georges Bank and in the Mid-Atlantic | Pelagic and sandy sub-tidal benthic habitats, often in bottom depressions or in association with sand waves and shell fragments, also in mud habitats bordering deep boulder reefs, on over deep boulder reefs in the southwest Gulf of Maine |
| Smooth skate | Juveniles | Offshore Gulf of Maine, some coastal bays in Maine and New Hampshire, and on the continental slope from Georges Bank to North Carolina | 100-400 offshore Gulf of Maine, $<100$ inshore Gulf of Maine, to 900 on slope | Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine |
| Smooth skate | Adults | Offshore Gulf of Maine and the continental slope from Georges Bank to North Carolina | 100-400 offshore Gulf of Maine, to 900 on slope | Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine |
| Summer flounder | Juveniles | Continental shelf and estuaries from Cape Cod, Massachusetts, to Cape Canaveral, Florida | To maximum 152 | Benthic habitats, including inshore estuaries, salt marsh creeks, seagrass beds, mudflats, and open bay areas |
| Summer flounder | Adults | Continental shelf from Cape Cod, Massachusetts, to Cape | To maximum 152 in colder months | Benthic habitats |


| Species | $\begin{aligned} & \hline \text { Life } \\ & \text { Stage } \\ & \hline \end{aligned}$ | Geographic Area | Depth (meters) | Habitat Type and Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Canaveral, Florida, including shallow coastal and estuarine waters during warmer months |  |  |
| Spiny dogfish | Juveniles | Primarily the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine | Deep water | Pelagic and epibenthic habitats |
| Spiny dogfish | Female subadults | Throughout the region | Wide depth range | Pelagic and epibenthic habitats |
| Spiny dogfish | Male subadults | Primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras | Wide depth range | Pelagic and epibenthic habitats |
| Spiny dogfish | Female adults | Throughout the region | Wide depth range | Pelagic and epibenthic habitats |
| Spiny dogfish | Male adults | Throughout the region | Wide depth range | Pelagic and epibenthic habitats |
| Thorny skate | Juveniles | Offshore Gulf of Maine, some coastal bays in the Gulf of Maine, and on the continental slope from Georges Bank to North Carolina | 35-400 offshore Gulf of Maine, $<35$ inshore Gulf of Maine, to 900 om slope | Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud |
| Thorny skate | Adults | Offshore Gulf of Maine and on the continental slope from Georges Bank to North Carolina | 35-400 offshore Gulf of Maine, < 35 inshore Gulf of Maine, to 900 om slope | Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud |
| White hake | Juveniles | Gulf of Maine, Georges Bank, and Southern New England, including bays and estuaries in the Gulf of Maine | Mean high water - $300$ | Intertidal and sub-tidal estuarine and marine habitats on finegrained, sandy substrates in eelgrass, macroalgae, and unvegetated habitats |
| White hake | Adults | Gulf of Maine, including coastal bays and estuaries, and the outer continental shelf and slope | 100-400 offshore Gulf of Maine, >25 inshore Gulf of Maine, to 900 on slope | Sub-tidal benthic habitats on finegrained, muddy substrates and in mixed soft and rocky habitats |
| Windowpane flounder | Juveniles | Estuarine, coastal, and continental shelf waters from the Gulf of Maine to northern Florida, including bays and estuaries from Maine to Maryland | Mean high water - $60$ | Intertidal and sub-tidal benthic habitats on mud and sand substrates |
| Windowpane flounder | Adults | Estuarine, coastal, and continental shelf waters from the Gulf of Maine to Cape Hatteras, North Carolina, including bays and estuaries from Maine to Maryland | Mean high water - $70$ | Intertidal and sub-tidal benthic habitats on mud and sand substrates |
| Winter flounder | Eggs | Eastern Maine to Absecon Inlet, New Jersey ( $39^{\circ} 22^{\prime} \mathrm{N}$ ) and Georges Bank | 0-5 south of Cape Cod, 0-70 Gulf of Maine and Georges Bank | Sub-tidal estuarine and coastal benthic habitats on mud, muddy sand, sand, gravel, submerged aquatic vegetation, and macroalgae |
| Winter flounder | Juveniles | Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and MidAtlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey | Mean high water - $60$ | Intertidal and sub-tidal benthic habitats on a variety of bottom types, such as mud, sand, rocky substrates with attached macro algae, tidal wetlands, and eelgrass; young-of-the-year juveniles on muddy and sandy sediments in and |


| Species | Life Stage | Geographic Area | Depth (meters) | Habitat Type and Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks |
| Winter flounder | Adults | Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and MidAtlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey | Mean high water - $70$ | Intertidal and sub-tidal benthic habitats on muddy and sandy substrates, and on hard bottom on offshore banks; for spawning adults, also see eggs |
| Winter skate | Juveniles | Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries from eastern Maine to Chincoteague Bay, Virginia, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic | 0-90 | Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud |
| Winter skate | Adults | Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries in Maine and New Hampshire, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic | 0-80 | Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud |
| Witch flounder | Juveniles | Gulf of Maine and outer continental shelf and slope | 50-400 and to 1500 on slope | Sub-tidal benthic habitats with mud and muddy sand substrates |
| Witch flounder | Adults | Gulf of Maine and outer continental shelf and slope | $\begin{aligned} & 35-400 \text { and to } 1500 \\ & \text { on slope } \end{aligned}$ | Sub-tidal benthic habitats with mud and muddy sand substrates |
| Yellowtail flounder | Juveniles | Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine | 20-80 | Sub-tidal benthic habitats on sand and muddy sand |
| Yellowtail flounder | Adults | Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine | 25-90 | Sub-tidal benthic habitats on sand and sand with mud, shell hash, gravel, and rocks |

### 6.4.3 Fisheries Habitat Impact Considerations

The actions proposed in this document are relevant to the recreational summer flounder, scup, black sea bass, and bluefish fisheries. The recreational fisheries for all four species are almost exclusively hook and line fisheries. Recreational hook and line gears generally have minimal impacts on physical habitat and EFH in this region (Stevenson et al. 2004). Weighted hook and line gear can contact the bottom, but the magnitude and footprint of any impacts resulting from this contact is likely minimal. Thus, the recreational fisheries are expected to have very minor or no impacts on habitat.

### 6.5 Protected Species

Numerous protected species occur in the affected environment of the Summer Flounder, Scup, and Black Sea Bass FMP and the Bluefish FMP (Table 33). These species are under NMFS jurisdiction and are afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. For information on these species (e.g., life history, distribution, stock status), refer to NOAA Fisheries Species Directory.

To aid in the identification of MMPA protected species that occur in the affected environment of this action (Table 33), the NMFS Marine Mammal Stock Assessment Reports for the Atlantic Region and MMPA List of Fisheries were referenced. To aid in identifying ESA listed species that occur in the affected environment considered by the action (Table 33), we reviewed the May 27, 2021, Biological Opinion (Opinion; NMFS 2021) issued by NMFS. The 2021 Opinion considered the effects on ESA-listed species and designated critical habitat of the NMFS' authorization of ten FMPs (including the Summer Flounder, Scup, and Black Sea Bass FMP and the Bluefish FMP), NMFS' North Atlantic Right Whale Conservation Framework, and the New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment 2. The Opinion determined that the proposed action may adversely affect, but is not likely to jeopardize, the continued existence of North Atlantic right, fin, sei, or sperm whales; the Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead, leatherback, Kemp's ridley, or North Atlantic DPS of green sea turtles; any of the five DPSs of Atlantic sturgeon; Gulf of Maine DPS Atlantic salmon; or giant manta rays. The Opinion also concluded that the proposed action is not likely to adversely affect designated critical habitat for North Atlantic right whales, the Northwest Atlantic Ocean DPS of loggerhead sea turtles, U.S. DPS of smalltooth sawfish, Johnson's seagrass, or elkhorn and staghorn corals. An Incidental Take Statement was issued in the Opinion. The Incidental Take Statement includes reasonable and prudent measures and their implementing terms and conditions, which NMFS determined are necessary or appropriate to minimize impacts of the incidental take in the fisheries assessed in this Opinion (NMFS 2021).

Various gear types used to harvest Council-managed species may interact with protected species. Specifically, interactions between protected species and the following gear types have been observed or documented: hook and line, sink gillnet, bottom otter trawl, mid-water trawl, and pot/trap. As described in more detail in Section 7.5, the measures proposed in this action are procedural (i.e., administrative in nature) and therefore, in and of themselves, will not cause the operation of the summer flounder, scup, black sea bass, or bluefish fisheries (e.g., effort, behavior, area fished, gear quantity) to change. Therefore, details on gear interaction risks to protected species are not provided in this document. Information on interaction risks associated with gear types used in each FMP may be found in the most recent environmental assessment document for each FMP (i.e., MAFMC 2021 for bluefish and MAFMC 2022 for summer flounder, scup, and black sea bass).

Table 33: Protected species that may occur in the affected environment of the Summer Flounder, Scup, and Black Sea Bass FMP and the Bluefish FMP. Marine mammal species italicized and in bold are considered MMPA strategic stocks. ${ }^{19}$

| Species | Status |
| :--- | :--- |
| Cetaceans | Endangered |
| North Atlantic right whale (Eubalaena glacialis) | Protected (MMPA) |
| Humpback whale, West Indies DPS (Megaptera novaeangliae) | Endangered |
| Fin whale (Balaenoptera physalus) | Endangered |
| Sei whale (Balaenoptera borealis) | Endangered |
| Blue whale (Balaenoptera musculus) | Endangered |
| Sperm whale (Physeter macrocephalus | Protected (MMPA) |
| Minke whale (Balaenoptera acutorostrata) | Protected (MMPA) |
| Pilot whale (Globicephala spp.) ${ }^{20}$ | Protected (MMPA) |
| Pygmy sperm whale (Kogia breviceps) | Protected (MMPA) |
| Dwarf sperm whale (Kogia sima) | Protected (MMPA) |
| Risso's dolphin (Grampus griseus) | Protected (MMPA) |
| Atlantic white-sided dolphin (Lagenorhynchus acutus) | Protected (MMPA) |
| Short Beaked Common dolphin (Delphinus delphis) | Protected (MMPA) |
| Atlantic Spotted dolphin (Stenella frontalis) | Protected (MMPA) |
| Striped dolphin (Stenella coeruleoalba) | Protected (MMPA) |
| Bottlenose dolphin (Tursiops truncatus) ${ }^{21}$ | Protected (MMPA) |
| Harbor porpoise (Phocoena phocoena) | Endangered |
| Sea Turtles | Endangered |
| Leatherback sea turtle (Dermochelys coriacea) | Threatened |
| Kemp's ridley sea turtle (Lepidochelys kempii) | Threatened |
| Green sea turtle, North Atlantic DPS (Chelonia mydas) | Endangered |
| Loggerhead sea turtle (Caretta caretta), Northwest Atlantic Ocean DPS |  |
| Hawksbill sea turtle (Eretmochelys imbricate) | Endangered |
| Fish | Endangered |
| Shortnose sturgeon (Acipenser brevirostrum) |  |
| Atlantic salmon (Salmo salar) | Threatened |
| Atlantic sturgeon (Acipenser oxyrinchus) | Endangered |
| Gulf of Maine DPS | Threatened |
| New York Bight, Chesapeake Bay, Carolina \& South Atlantic DPS' | Endangered |
| Giant manta ray (Manta birostris) | Threatened |
| Smalltooth sawfish (U.S. DPS) (Pristis pectinata) | Threatened |
| Oceanic Whitetip shark (Carcharhinus longimanus) | Candidate |
| Nassau grouper (Epinephelus striatus) |  |
| Cusk (Brosme brosme) | Protected (MMPA) |
| Pinnipeds | Protected (MMPA) |
| Harbor seal (Phoca vitulina) |  |
| Gray seal (Halichoerus grypus) |  |
|  | DPA |

[^15]| Species | Status |
| :--- | :--- |
| Harp seal (Phoca groenlandicus) | Protected (MMPA) |
| Hooded seal (Cystophora cristata) | Protected (MMPA) |
| Corals |  |
| Elkhorn Coral (Acropora palmata) | Threatened |
| Staghorn Coral (Acropora cervicornis) | Threatened |
| Pillar Coral (Dendrogyra cylindrus) | Threatened |
| Rough cactus coral (Mycetophyllia ferox) | Threatened |
| Lobed star coral (Orbicella annularis) | Threatened |
| Mountainous star coral (Orbicella faveolata) | Threatened |
| Boulder star coral (Orbicella franksi) | Threatened |
| Seagrass |  |
| Johnson's Sea Grass (Halophila johnsonii) | Threatened |
| Critical Habitat |  |
| North Atlantic Right Whale | ESA Designated |
| Northwest Atlantic Ocean DPS of Loggerhead Sea Turtle | ESA Designated |
| Johnson's Sea Grass | ESA Designated |
| Elkhorn and staghorn corals | ESA Designated |
| Smalltooth sawfish (U.S. DPS) | ESA Designated |

## 7 Environmental Impacts of the Alternatives

This EA analyzes the expected impacts of the alternatives on each VEC. The alternatives are compared to the current conditions of the VECs and to each other. They are compared to each other within each alternative set. The alternatives are not compared to a theoretical condition where the fisheries are not operating. These fisheries have occurred for many decades and are expected to continue into the foreseeable future. The nature and extent of the management programs for these fisheries have been examined in detail in EAs and Environmental Impact Statements prepared for previously implemented management actions.
The current conditions of the VECs are summarized in Table 34 and described in more detail in Section 6. Impacts are described both in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high) based on the guidelines in Table 35).

The recent conditions of the VECs include the most recent stock status of summer flounder, scup, black sea bass, bluefish non-target species, and protected species (Sections 6.2, 6.3, and 6.5). They also include the fishing practices, levels of fishing effort, and harvest in the summer flounder, scup, black sea bass, and bluefish fisheries over the most recent three years (20192021), as well as the economic characteristics of the fisheries over the most recent three years (Section 6.1). They also include recent levels of habitat availability and quality (Section 6.4).
The expected impacts of the alternatives on each VEC are summarized in Sections 7.1-7.5. In general, alternatives which may result in overfishing or an overfished status for target or nontarget species are considered to have negative impacts for those species. Conversely, alternatives which may result in decreased fishing mortality, ending overfishing, rebuilding to the target biomass level, maintaining biomass above the target level, or maintaining fishing mortality below the threshold level are considered to have positive impacts (Table 35).

Alternatives that improve the quality or quantity of habitat are expected to have positive impacts on habitat. Alternatives that degrade the quality or quantity or increase disturbance of habitat are expected to have negative impacts (Table 35). A reduction in fishing effort is likely to decrease
the time that fishing gear is in the water, thus reducing the potential for interactions between fishing gear and habitat. As previously stated, the recreational fisheries for these species primarily use hook and line gear, which has minor impacts on habitat compared to other gear types (Section 6.4.3). In addition, most areas fished have been fished by multiple fishing fleets over many decades and are unlikely to see a measurable improvement in their condition in response to a decrease in effort for an individual fishery.

The impacts of the alternatives on protected species take into account impacts to ESA-listed species, as well as impacts to non-ESA listed MMPA protected species in good condition (i.e., marine mammal stocks whose PBR level have not been exceeded) or poor condition (i.e., marine mammal stocks that have exceeded or are near exceeding their PBR level). By definition, all ESA-listed species are in poor condition and any take can negatively impact their recovery. As a result, for ESA-listed species, any action that results in interactions or take is expected to have negative impacts, including actions that reduce interactions. Actions expected to result in positive impacts on ESA-listed species include only those actions that contain specific measures to ensure no interactions (i.e., no take). The stock conditions for marine mammals not listed under the ESA varies by species; however, all are in need of protection. For non-ESA listed marine mammal stocks that have their PBR level reached or exceeded, negative impacts would be expected from alternatives that result in the potential for interactions between fisheries and those stocks. For stocks with PBR levels that have not been exceeded, alternatives not expected to change fishing behavior or effort may have positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal (Table 35).
Socioeconomic impacts are considered in relation to potential changes in recreational harvest, fishing opportunities, and angler satisfaction. Alternatives which could lead to increased availability of target species and/or an increase in catch per unit effort (CPUE) could lead to increased harvest. Increased harvest is generally considered to have positive socioeconomic impacts because it could result in increased revenues (for for-hire vessels and recreational fishery support businesses) and angler satisfaction (for all recreational fishery participants); however, if an increase in harvest leads to a decrease in in future availability for any of target species, then negative socioeconomic impacts could also occur, including impacts which could affect the commercial fisheries.

The expected impacts of the alternatives on the VECs are derived from consideration of both the current conditions of the VECs and expected changes in fishing effort, fishing behavior, and the management process under each alternative. Fishing effort is influenced by a variety of interacting factors, including management measures, availability of the species in question and other potential target species, weather, economic factors, and other factors. It is not possible to quantify with confidence how fishing effort will change under each alternative; therefore, expected changes are described qualitatively. It is important to note that each alternative would define the process for setting recreational bag, size, and season limits (i.e., recreational measures). None of the alternatives define specific measures and the appropriate measures would be implemented and revised (as necessary) through the annual specifications process. The impacts of the measures to be used in a given specifications cycle will be analyzed through separate future specifications documents.

Table 34. Recent conditions of VECs (described in more detail in Section 6). Note that summer flounder, scup, black sea bass, and bluefish are both target and non-target species.

| VEC |  | Condition |  |
| :---: | :---: | :---: | :---: |
|  | Summer flounder | Recreational harvest during 2019-2021 averaged 8.23 million pounds. Summer flounder was the primary target species for an estimated 7.48 million recreational angler trips. |  |
|  | Scup | Recreational harvest during 2019-2021 averaged 14.55 million pounds. Scup was the primary target species for an estimated 2.69 million recreational angler trips. |  |
|  | Black sea bass | Recreational harvest during 2019-2021 averaged 9.88 million pounds. Black sea bass was the primary target species for an estimated 1.69 million recreational angler trips. |  |
|  | Bluefish | Recreational harvest during 2019-2021 averaged 13.86 million pounds. Bluefish was the primary target species for an estimated 7.41 million recreational angler trips. |  |
| Target species (Section 6.2) | Summer flounder | Overfishing not occurring | Not overfished |
|  | Scup | Overfishing not occurring | Not overfished |
|  | Black sea bass | Overfishing not occurring | Not overfished |
|  | Bluefish | Overfishing not occurring | Overfished |
| Nontarget species (Section 6.3) | Smooth dogfish | Overfishing not occurring | Not overfished |
|  | Tautog (MA/RI region) | Overfishing not occurring | Not overfished |
|  | Tautog (Long Island Sound region) | Overfishing not occurring | Not overfished |
|  | Tautog (NJ/NY Bight region) | Overfishing not occurring | Overfished |
|  | Striped bass | Overfishing occurring | Overfished |
|  | Spanish mackerel | Overfishing not occurring | Overfished |
|  | Northern sea robin | Unknown | Unknown |
|  | Striped sea robin | Unknown | Unknown |
|  | King whiting | Unknown | Unknown |
|  | Pinfish | Unknown | Unknown |
| Habitat (Section 6.4) |  | Commercial fishing impacts are complex, variable, and typically adverse. Recreational fishing has minimal impacts on habitat. Nonfishing activities had historically negative but site-specific effects on habitat quality. |  |
| Protected species (Section 6.5) | Sea turtles | Leatherback and Kemp's ridley sea turtles are endangered; loggerhead (NW Atlantic Ocean DPS) and green (North Atlantic DPS) sea turtles are threatened. |  |
|  | Fish | Atlantic salmon, shortnose sturgeon, and the New York Bight, Chesapeake, Carolina, and South Atlantic DPSs of Atlantic sturgeon are endangered. Atlantic sturgeon Gulf of Maine DPS, oceanic whitetip shark, and giant manta ray are threatened. Cusk are a candidate species. |  |
|  | Large whales | All are protected under the MMPA. North Atlantic right, fin, blue, sei, and sperm whales are also listed as endangered under the ESA. |  |
|  | Small cetaceans | Pilot whales, dwarf and pygmy sperm whales, species of dolphins, and harbor porpoise are protected under the MMPA. |  |
|  | Pinnipeds | Gray, harbor, hooded, and harp seals are protected under the MMPA. |  |

Table 35. Guidelines for defining the direction and magnitude of the impacts of alternatives on the VECs.

| General Definitions |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| VEC | Condition | Direction of Impact |  |  |  |
|  |  | Positive (+) |  | Negative (-) | No Impact (0) |
| Target and Non-target Species | Overfished status defined by the MSA | Alternatives that would maintain or are projected to result in a stock status above an overfished condition* |  | Alternatives that would maintain or are projected to result in a stock status below an overfished condition* | Alternatives that do not impact stock / populations |
| ESA-listed <br> Protected Species (endangered or threatened) | Populations at risk of extinction (endangered) or endangerment (threatened) | Alternatives that contain specific measures to ensure no interactions with protected species (i.e., no take) |  | Alternatives that result in interactions/take of listed resources, including actions that reduce interactions | Alternatives that do not impact ESA listed species |
| MMPA <br> Protected Species (not also ESA listed) | Stock health may vary but populations remain impacted | Alternatives that will maintain takes below PBR and approaching the Zero Mortality Rate Goal |  | Alternatives that result in interactions with/take of marine mammals that could result in takes above PBR | Alternatives that do not impact marine mammals |
| Physical Environment / Habitat / EFH | Many habitats degraded from historical effort | Alternatives that improve the quality or quantity of habitat |  | Alternatives that degrade the quality, quantity or increase disturbance of habitat | Alternatives that do not impact habitat quality |
| Human Communities (Socioeconomic) | Highly variable but generally stable in recent years | Alternatives that increase revenue and social well-being of fishermen and/or communities |  | Alternatives that decrease revenue and social well-being of fishermen and/or communities | Alternatives that do not impact revenue and social wellbeing of fishermen and/or communities |
| Magnitude of Impact |  |  |  |  |  |
| A range of impact qualifiers is used to indicate any existing uncertainty | Negligible |  | To such a small degree to be indistinguishable from no impact |  |  |
|  | Slight (i.e., slight positive or slight negative) |  | To a lesser degree / minor |  |  |
|  | Moderate (i.e., m positive or negati | derate <br> e) | To an average degree (i.e., more than "slight", but not "high") |  |  |
|  | High (i.e., high p or high negative) | sitive | To a substantial degree (not significant unless stated) |  |  |
|  | Significant |  | Affecting the resource condition to a great degree, see 40 CFR 1508.27. |  |  |
|  | Likely |  | Some degree of uncertainty associated with the impact |  |  |
| *Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another attribute aside from the MSA status, but this must be justified within the impact analysis. |  |  |  |  |  |

### 7.1 Socioeconomic Impacts

As previously described, the alternatives considered in this action define the process for setting recreational bag, size, and season limits. The alternatives do not implement specific measures. Under all alternatives, measures will be implemented and modified as necessary through the annual specification process. The impacts of those measures will be analyzed through separate future specifications documents. Expected socioeconomic impacts related to the process for setting measures as defined by each alternative are summarized below.

### 7.1.1 Socioeconomic Impacts of Alternative Set 1 (Process for Setting Recreational Measures)

### 7.1.1.1 Socioeconomic Impacts of Alternative 1A (No Action/Current FMP Requirements for Setting Recreational Measures)

Under Alternative 1A, recreational measures would be set based on the current FMP requirements. The primary goal would be to allow harvest to meet but not exceed the RHL. The RHL is set based on the most recent stock assessment information and therefore accounts for stock status. However, advisors and other recreational fishery participants have expressed frustration that measures do not always appear reflective of stock status (a negative socioeconomic impact) because restrictive measures can be required under high biomass as high availability, especially when combined with high effort, can lead to high harvest and therefore the need to use restrictive measures to prevent overfishing. Alternatively, low biomass and low availability can lead to low harvest, which can allow comparatively liberal measures to remain in place without risking RHL overages.

Under this alternative, measures can remain unchanged over several years if RHL overages are not expected. However, if needed, measures can change as frequently as every year. All other alternatives in Alternative Set 1 would set measures for two years at a time with interim year changes only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. Annual changes in measures can ensure that measures are reflective of changing conditions based on the best available data. This should contribute to the goal of preventing overfishing on an annual basis (a positive impact). However, frequent changes in measures can decrease angler satisfaction, pose challenges for planning for-hire trips (for captains, crew, and customers), and can increase non-compliance due to confusion regarding the measures (negative socioeconomic impacts).

For these reasons, Alternative 1A is expected to have both moderate positive and moderate negative socioeconomic impacts. Compared to all other alternatives, it has the potential for the most frequent changes in measures (a negative socioeconomic impact), but also the potential for measures to be the most finely tuned to changing stock status and fishery conditions (a positive socioeconomic impact). Compared to Alternatives 1B-1E (i.e., the Percent Change Approach and the three binned approaches), measures would be less clearly tied to stock status as additional stock status considerations beyond the RHL would not be required to be explicitly considered when setting the measures (a negative socioeconomic impact).

### 7.1.1.2 Socioeconomic Impacts of Alternative 1B (Percent Change Approach; Preferred With 3 Year Sunset)

As described in more detail in Section 5.1.2, measures under Alternative 1B would aim to achieve a percent change in harvest compared to status quo measures. The appropriate percent
change would vary based on the magnitude of the difference between expected harvest under status quo measures and the upcoming two-year average RHL, as well as based on biomass compared to the target level. Greater percent changes (liberalizations or reductions) would be required when greater RHL overages or underages are expected and when biomass is very high or when it is below the target level (see Table 5 in Section 5.1.2). In addition, this alternative requires consideration of uncertainty in harvest estimates when determining the appropriate magnitude and direction of change. By more explicitly accounting for biomass and uncertainty in the recreational data compared to the process used under the current FMP requirements (Alternative 1A, see previous section), this alternative could result in greater acceptance of the need to change measures (a positive socioeconomic impact). In addition, Alternative 1 B would set measures for two years at a time, with changes in interim years only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. This could provide some degree of stability in measures, which would generally be considered a positive socioeconomic impact.

As described in more detail in Section 5.1.2, in some circumstances, this alternative could result in measures that are more or less restrictive than they would otherwise need to be to allow the recreational fishery to meet but not exceed the RHL. When measures are more restrictive than necessary to prevent RHL overages, this would result in foregone fishing opportunities (a negative socioeconomic impact). When measures are more liberal than necessary to prevent RHL overages, this could increase the likelihood of exceeding the ACL and triggering AMs in future years (a negative socioeconomic impact).
For these reasons, Alternative 1B is expected to have both moderate positive and moderate negative socioeconomic impacts.
Compared to the other alternatives, Alternative 1B has the potential for less frequent changes in measures than Alternative 1A (a positive socioeconomic impact) as measures would be set for two years at a time, as opposed to one year at a time under Alternative 1A. Alternative 1B would consider the same frequency of changes as Alternatives 1C-1E (i.e., every other year). As shown in Table 5 in Section 5.1.2, most combinations of biomass and RHL comparisons under Alternative 1B would result in a change in measures. Alternatives 1C-1E (the binned approaches) would leave measures unchanged over a range of stock status and fishery conditions. Therefore, Alternative 1B could potentially result in more frequent changes in measures than Alternatives 1C-1E (a negative socioeconomic impact).
By adding additional considerations of biomass compared to the target level, Alternative 1B could result in a greater acceptance of the need to change measures compared to Alternative 1A (a positive socioeconomic impact). However, Alternative 1B includes greater consideration of the RHL and less consideration of other stock status metrics beyond biomass level (e.g., recruitment, fishing mortality, biomass trend) compared to Alternatives $1 \mathrm{C}-1 \mathrm{E}$; therefore, measures may be perceived as less closely tied to stock status compared to Alternatives 1C-1E (a negative socioeconomic impact). In addition, by focusing less on preventing RHL overages than Alternative 1A, Alternative 1B may result in more frequent ACL overages and therefore more frequent AMs (a negative socioeconomic impact). However, Alternative 1B gives greater consideration to the RHL than Alternatives 1C-1E, which could reduce the likelihood of triggering AMs compared to those alternatives (a positive socioeconomic impact).

### 7.1.1.3 Socioeconomic Impacts of Alternative 1C (Fishery Score Approach)

As described in more detail in Section 5.1.3, under Alternative 1C, four stock status and fishery performance indicators would be used to place the stocks into one of four management measure bins. By explicitly accounting for multiple stock status and fishery performance metrics when determining if measures should change, this alternative could result in greater acceptance of the need to change measures, compared to the process used under the current FMP requirements (Alternative 1A, see Section 7.1.1.1). This could be considered a positive socioeconomic impact.
Under this alternative, there are only four possible management outcomes (four bins) across the entire range of possible stock status and fishery conditions. Therefore, the same measures would remain in place over a wide range of conditions. In some cases, this would result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions. In those cases, this would result in foregone fishing opportunities and negative socioeconomic impacts due to reduced angler satisfaction, reduced catches on for-hire trips, reduced demand for for-hire trips, reduced revenues for for-hire captains and crew, as well as negative impacts to recreational support businesses such as bait and tackle shops. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts (higher angler satisfaction, higher for-hire revenues, etc.). However, measures that are too liberal for current conditions can result in catch that is too high and could risk exceeding the ACL and triggering an AM. Triggering of AMs could require more restrictive measures in future years to correct or mitigate for the impacts of the past overages and to prevent future overages. This would result in negative socioeconomic impacts in years when AMs are implemented.
Stability in measures would generally be considered a positive socioeconomic impact unless the measures are perceived to be overly restrictive. However, as only four sets of measures would be used to cover the entire range of possible fishery and stock status conditions, measures may change more drastically when changes are needed under this alternative compared to all other alternatives. This would be considered a generally negative socioeconomic impact, especially when measures are made more restrictive.

For these reasons, Alternative 1 C is expected to have both moderate positive and moderate negative socioeconomic impacts.

As measures would remain in place over a wider range of conditions than all other alternatives, Alternative 1 C has the greatest potential for negative socioeconomic impacts due to foregone fishing opportunities (when measures are more restrictive than if they were more finely tuned to changing conditions) and due to the potential to trigger AMs (when measures that are too liberal remain in place for too long and result in ACL overages). However, this alternative also has the greatest potential for positive socioeconomic impacts due to stability in measures. It also has the potential for greater acceptance of the need to change measures (a positive socioeconomic impact) than Alternatives 1A, 1B, and 1E as it explicitly considers a greater number of fishery and stock status indicators when determining if measures should change. It considers similar indicators as Alternative 1D.

### 7.1.1.4 Socioeconomic Impacts of Alternative 1D (Biological Reference Point Approach)

As described in more detail in Section 5.1.4, Alternative 1D includes 13 sets of management measures to cover the entire range of possible stock status and fishery conditions. Determination
of the appropriate management measure bin would be based on biomass compared to the target level (grouped into four categories) and fishing mortality compared to $\mathrm{F}_{\text {MSY }}$ (grouped into two categories). If these categorical rankings do not change for a second specifications cycle, then consideration would also be given to trend in biomass and recruitment. When overfishing is occurring during the second specifications cycle, consideration would also be given to whether recent RHLs were exceeded.

This alternative requires explicit consideration of a greater number of stock status and fishery performance indicators than all other alternatives except Alternative 1C. Alternative 1C considers similar indicators as this alternative, but the management response under Alternative 1 C is less finely tuned to changing conditions. To the extent that these considerations result in a perception that measures are set and modified based on stock status, potentially leading to greater acceptance of the measures and the need to change measures, this could be considered a positive socioeconomic impact.
As with the other binned approaches (i.e., Alternatives 1C and 1E), this alternative would leave the same measures in place over a range of conditions; however, the range would be narrower than under the other binned approaches. As such, measures may change more frequently (a negative socioeconomic impact), but they may be more reflective of changing conditions (a positive socioeconomic impact) than the other binned approaches.
As previously stated, in some cases, leaving measures unchanged over a range of conditions could result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions. In those cases, this would result in foregone fishing opportunities and negative socioeconomic impacts. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts. However, measures that are too liberal for current conditions can result in the need for more restrictive measures in future years (e.g., by causing the stock to drop to a more restrictive management measure bin), which would result in negative socioeconomic impacts in future years.
For these reasons, Alternative 1D is expected to have both moderate positive and moderate negative socioeconomic impacts.
Compared to all other alternatives, Alternative 1D has the potential to result in the greatest perceived link between measures and stock status (a positive socioeconomic impact) as a greater number of stock status metrics would be explicitly considered compared to Alternatives 1A, 1B, and 1 E and the measures would be more finely tuned to those metrics than Alternative 1C.
As described above, compared to Alternatives 1 C and 1E, this alternative could result in more frequent changes in measures (a negative socioeconomic impact), but measures would be more finely tuned to changing stock conditions (a positive socioeconomic impact). Alternatives 1A and 1B do not use bins and could therefore result in more frequent changes in measures than Alternative 1D, which could similarly be considered more positive (stability in measures) and more negative (measures potentially less finely tuned to changing conditions) for Alternative 1D compared to Alternatives 1A and 1B.

### 7.1.1.5 Socioeconomic Impacts of Alternative 1E (Biomass Based Matrix Approach)

As described in more detail in Section 5.1.5, Alternative 1E includes six sets of management measures to cover the entire range of possible stock status and fishery conditions. Determination
of the appropriate management measure bin would be based on biomass compared to the target level (grouped into four categories) and biomass trend (grouped into three categories).
By explicitly accounting for biomass and biomass trend when determining if measures should change, this alternative could result in greater acceptance of the measures and the need to change measures than Alternative 1A, for which the link between measures and stock status can be less intuitive. This could be considered a positive socioeconomic impact. However, the measures may be perceived as less closely tied to stock status and recent fishery conditions than Alternatives 1B, 1C, and 1D as those alternatives consider a greater number of stock status and fishery indicators. For example, fishing mortality is not considered under Alternative 1E.
Under this alternative, there are only six possible management outcomes (six bins) across the entire range of possible stock status and fishery conditions. Therefore, the same measures would remain in place over a wide range of conditions. This would result in measures that are more restrictive than would be necessary if measures were more finely tuned to changing conditions and if additional metrics beyond biomass and biomass trend were considered (e.g., F/FMSY). In those cases, this would result in foregone fishing opportunities and negative socioeconomic impacts due to reduced angler satisfaction, reduced catches on for-hire trips, reduced demand for for-hire trips, reduced revenues for for-hire captains and crew, as well as negative impacts to recreational support businesses such as bait and tackle shops. In cases where measures are more liberal than they would be if they were more finely tuned to changing conditions, this would result in positive socioeconomic impacts (higher angler satisfaction, higher for-hire revenues, etc.). However, measures that are too liberal for current conditions can result in catch that is too high and could risk exceeding the ACL and triggering an AM. Triggering of AMs could require more restrictive measures in future years to correct or mitigate for the impacts of the past overages and to prevent future overages. This would result in negative socioeconomic impacts in years when AMs are implemented.

Stability in measures would generally be considered a positive socioeconomic impact unless the measures are perceived to be overly restrictive. However, as only six sets of measures would be used to cover the entire range of possible fishery and stock status conditions, measures may change more drastically when changes are needed under this alternative compared to all other alternatives except for Alternative 1C, which uses four bins. This would be considered a generally negative socioeconomic impact, especially when measures are made more restrictive.

For these reasons, Alternative 1E is expected to have both moderate positive and moderate negative socioeconomic impacts.
As measures would remain in place over a wider range of conditions than all other alternatives except Alternative 1C, this alternative has a greater potential for negative socioeconomic impacts due to foregone fishing opportunities (when measures are more restrictive than if they were more finely tuned to changing conditions) and due to the potential to trigger AMs (when measures that are too liberal remain in place for too long and result in ACL overages) compared to all but Alternative 1C. Compared to all but Alternative 1C, this alternative also has the greatest potential for positive socioeconomic impacts due to stability in measures.

### 7.1.2 Socioeconomic Impacts of Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E)

As described in more detail in Section 5.2, the alternatives in Alternative Set 2 consider whether the measures assigned to each management measure bin in Alternatives 1C-1E would aim to achieve a target level of recreational harvest informed by the RHL (Alternative 2A), recreational catch informed by the ACL (Alternative 2B), or recreational fishing mortality (Alternative 2C). Under all three alternatives, the target would reflect the stock conditions associated with that bin and the fishery would be constrained based on measures set to achieve the target. Alternatives 2A-2C define the currency used for defining that target. As the ACL, RHL, and FMSY are all defined in similar and related ways (Section 4.4), there may be minimal differences in the resulting measures across these three alternatives.

To the extent that a catch-based target (Alternative 2B) allows for greater consideration of dead discards compared to a harvest-based target (Alternative 2A), this may allow for increased angler satisfaction if it results in reduced discards and more fish to take home. However, it is worth noting that the recreational discard data are generally more uncertain than recreational harvest data; therefore, greater uncertainty may be introduced when setting measures based on a target level of catch rather than a target level of harvest. A similar issue may result from using a recreational fishing mortality-based target (Alternative 2C). Based on currently available data and analytical tools for all four species, there is a very limited ability to predict the fishing mortality resulting from any set of recreational management measures, without using catch (Alternative 2B) as a proxy for fishing mortality.

The target metric is intended to reflect current stock conditions; therefore, all three alternatives should have moderate positive socioeconomic impacts by contributing to the prevention of overfishing, maintaining biomass above the target level, or building biomass towards the target over time and, therefore, maintaining fishing opportunities. Given the considerations described above regarding data considerations and currently available analytical tools for each alternative, Alternative 2B may have the greatest potential for positive socioeconomic impacts, followed by Alternative 2A and then Alternative 2C.

### 7.1.3 Socioeconomic Impacts of Alternative Set $\mathbf{3}$ (Conservation Equivalency)

The following sections describe the expected socioeconomic impacts of the three conservation equivalency alternatives.

### 7.1.3.1 Socioeconomic Impacts of Alternative 3A (No Action on Conservation Equivalency; Preferred)

As described in more detail in Section 5.3.1, under this alternative, states would retain the ability to propose alternative measures through the Commission's conservation equivalency process. This would allow for measures that are tailored to the unique characteristics of the fisheries in each state while still ensuring that harvest, catch, or fishing mortality (depending on the alternatives selected from Alternative Sets 1 and 2) is constrained to appropriate levels. Therefore, this alternative is expected to have moderate positive socioeconomic impacts. Compared to the other conservation equivalency alternatives (i.e., Alternatives 3B and 3C), this alternative has the most positive expected socioeconomic impacts.

### 7.1.3.2 Socioeconomic Impacts of Alternative 3B (Regional Conservation Equivalency)

As described in more detail in Section 5.3.2, under this alternative, regional groupings of states could submit proposals for alternative recreational measures which are expected to achieve an equivalent level of recreational harvest, catch, or fishing mortality (depending on the alternatives selected from Alternative Sets 1 and 2) as the measures that would otherwise be implemented. States would have limited flexibility to deviate from other states within the same region. This could lead to greater consistency in measures across states, including in states with shared or adjacent fishing areas. For these reasons, this alternative is expected to have moderate positive socioeconomic impacts. These positive impacts may be lesser in magnitude than under Alternative 3A (see previous section) as there would be less flexibility to tailor measures to the unique characteristics of individual states. These impacts are expected to be more positive than Alternative 3C (see next section) as Alternative 3C would not allow for state or regional conservation equivalency.

### 7.1.3.3 Socioeconomic Impacts of Alternative 3C (Conservation Equivalency Is Disallowed)

As described in more detail in Section 5.3.3, under this alternative, conservation equivalency under the Commission process would not be permitted for any of the four species on a state or regional level. This would reduce the flexibility afforded to states/regions compared to the previous two alternatives. This could be considered a negative socioeconomic impact; however, it is important to note that states play a role in determining the measures that are implemented in every specifications cycle. This alternative would only limit the ability of states (and regional groupings of states) from proposing different measures than those agreed to earlier in the specifications process. In addition, disallowing conservation equivalency would improve the efficiency and predictability of the specifications process. For these reasons, this alternative is expected to have slight negative socioeconomic impacts.

Compared to the other conservation equivalency alternatives (i.e., Alternatives 3A and 3B), this alternative has the most negative expected socioeconomic impacts.

### 7.1.4 Socioeconomic Impacts of Alternative Set 4 (AMs Under Alternatives 1B, 1C-1, and 1E-1)

As described in more detail in Section 5.4, Alternative Set 4 considers a change to one specific component of the reactive AMs under Alternatives 1B, 1C-1, and 1E-1. Both Alternatives 4A and 4 B are only relevant when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold.

Under Alternative 4A, catch relative to the ABC would also be considered when determining the appropriate response to the ACL overage. Under Alternative 4B, the most recent estimate of fishing mortality compared to $\mathrm{F}_{\text {MSY }}$ would be considered, rather than catch relative to the ABC . In both cases, the response to the overage would be more strict if the ABC or $\mathrm{F}_{\text {MSY }}$ was also exceeded. If only the recreational ACL was exceeded, the response to the overage would be less strict (see Sections 5.1.2.3, 5.1.3.1, and 5.1.5.1 for more details).

Both Alternatives 4A and 4B could require more restrictive measures in years when AMs are implemented, which would result in negative socioeconomic impacts in those years. However, Alternatives 4A and 4B consider only the metrics used for determining the magnitude of the AM response in specific circumstances. They do not impact the determination of whether an AM was triggered. It is not possible to predict if either Alternative 4A or 4B would result in more frequent
use of a stricter AM response as this may vary on a case-by-case basis. For example, if the $\mathrm{F} / \mathrm{F}_{\text {MSY }}$ comparison under Alternative 4B suggests a less strict AM response could be used compared to Alternative 4A (i.e., although the ABC was exceeded, it did not result in overfishing based on the most recent information), this could be considered a slight positive socioeconomic impact. In this case, use of the most recent information on overfishing status would have reduced the magnitude of the needed restrictions. However, if the $\mathrm{F} / \mathrm{F}_{\text {MSY }}$ comparison based on the most recent information (Alternative 4B) suggests the recreational ACL overage(s) contributed to overfishing, even if the ABCs in those years were not exceeded, this could be considered a slight negative socioeconomic impact as greater restrictions would be required. For these reasons, Alternatives 4A and 4B could have both slight negative and slight positive socioeconomic impacts.

### 7.2 Impacts to Summer Flounder, Scup, Black Sea Bass, and Bluefish

The following sections describe the expected impacts of each alternative on the stock status of summer flounder, scup, black sea bass, and bluefish.

### 7.2.1 Impacts of Alternative Set 1 (Process for Setting Recreational Measures) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

The following sections describe the expected impacts of the alternatives in Alternative Set 1 on summer flounder, scup, black sea bass, and bluefish. As previously noted, Alternatives 1B-1E cannot be used for stocks in a rebuilding plan; therefore, they are not currently relevant for bluefish. As such, the sections below do not consider the potential impacts of Alternatives 1B-1E on the current stock status of bluefish. The impacts of Alternatives 1B-1E are considered for all four stocks in situations when those stocks are not in a rebuilding plan (i.e., currently for summer flounder, scup, and black sea bass and in the future for bluefish).

### 7.2.1.1 Impacts of Alternative 1A (No Action/Current FMP Requirements for Setting Recreational Measures) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As described in more detail in Section 5.1.1, the primary goal of recreational measures under Alternative 1A is to allow harvest to meet but not exceed the RHL. The RHL is derived from the most recent peer reviewed and accepted stock assessment and accounts for scientific uncertainty, the Council's ABC control rule (which defines the acceptable risk of overfishing based on biomass compared to the target level), commercial/recreational allocations, and assumptions about recreational dead discards in future years. The RHL can also account for management uncertainty deductions (Section 4.4). For all these reasons, the RHL is based on the best scientific information available and is intended to prevent overfishing. Therefore, by setting measures with the goal of allowing harvest to meet but not exceed the RHL, Alternative 1 A is expected to have moderate positive impacts on the current stock status of summer flounder, scup, and black sea bass by preventing overfishing, maintaining biomass at or above the target level (for scup and black sea bass; see Sections 6.2.2 and 6.2.3), or increasing biomass to the target level over time (for summer flounder; see Section 6.2.1).
The bluefish stock is currently overfished, but overfishing is not occurring (Section 6.2.4). The stock is under a rebuilding plan, which aims to bring the stock to the target biomass level over time. Under the current rebuilding plan, the stock is expected to remain overfished through 2023. As such, the RHL set under the current process (represented by Alternative 1A) is expected to have short term slight negative impacts for bluefish as the stock is expected to remain in an
overfished condition through 2023. However, slight positive impacts are expected over the long term as the RHL is set based on the rebuilding plan which aims to improve stock status over time.

Compared to the other alternatives in this document, this alternative has a greater potential for positive impacts than Alternatives 1B-1E.
As noted in Section 5.1.1, measures set under the current process have not always successfully achieved the goal of allowing harvest to meet but not exceed the RHL for all species. The Council and Commission are supporting development of improved statistical analysis tools for predicting the impacts of measures on harvest and catch while accounting for other factors such as angler preferences to the extent possible based on available data. These improved tools could be used under all alternatives. It is also worth noting that measures under all alternatives will aim to achieve a target level of harvest, catch, or fishing mortality (depending on the alternative) and the same challenges in selecting measures to achieve the relevant target will remain under all alternatives.

### 7.2.1.2 Impacts of Alternative 1B (Percent Change Approach; Preferred With 3 Year Sunset) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As previously noted, this alternative may not be used for stocks under a rebuilding plan and is therefore not relevant for the current stock status of bluefish. As such, the impacts summarized below do not consider the current stock status of bluefish. This alternative may be used for bluefish in future years once the stock is no longer in a rebuilding plan.
As described in more detail in Section 5.1.2, all combinations of sub-alternatives under Alternative 1B would allow for some level of RHL overages in some circumstances (e.g., when the average RHL is within the harvest estimate confidence interval and biomass is greater than $150 \%$ of the target level; when the average RHL is below the harvest estimate confidence interval and biomass is greater than $150 \%$ of the target level). RHL overages carry a risk of ACL overages, which in turn risk ABC and OFL overages and therefore risk resulting in overfishing (Section 4.4). Therefore, this alternative cannot be demonstrated to proactively prevent overfishing every year in all circumstances. As described above, the RHL accounts for the best available scientific information on stock status. Therefore, even at high biomass levels, RHL overages can result in overfishing.

In addition, in their review of the alternatives in this action, the SSC noted that the RHL already accounts for the most recent biomass information. Therefore, the combination of RHL considerations and biomass information used under this alternative would essentially result in "double counting" biomass. This could lead to catch that is too high (compared to what would be necessary to prevent overfishing) when stock status is good and too low when stock status is poor.

ACL overages under Alternative 1B would still trigger an AM response (Section 5.1.2.3). AMs could require a change in measures with the goal of correcting or mitigating for the impacts of ACL overages and preventing future overages. In addition, this alternative is structured such that the management response would be more conservative when biomass is below the target level compared to when it is at or above the target level (though the more conservative response may not always proactively prevent overfishing unless required by an AM). If stock status is negatively impacted by RHL overages to the extent that biomass falls to a lower category, a
more conservative approach would be used which could contribute to increasing biomass over time.

This alternative is expected to have negative impacts on the stock status of summer flounder, scup, black sea bass, and bluefish (if used in the future when the stock is no longer under a rebuilding plan) when RHL overages occur. However, these impacts are expected to be slight negative given AMs would aim to correct and mitigate negative impacts of ACL overages after they occur.
It is also worth noting that under some combinations of the three RHL and biomass categories, all combinations of sub-alternatives under Alternative 1B could require some level of RHL underages (e.g., when biomass is below the target level and an RHL overage is not expected based on the confidence interval comparison). This would result in measures that are more restrictive than necessary to allow harvest to meet but not exceed the RHL. Any alternatives that prevent RHL overages would contribute to prevention of ACL, ABC, and OFL overages, and therefore would be expected to have moderate positive impacts on the stocks by preventing overfishing, maintaining biomass at or above the target level, or increasing biomass to the target level over time. In these circumstances, Alternative 1B would be expected to have moderate positive impacts on the stocks.

In summary, this alternative is expected to have impacts on summer flounder, scup, black sea bass, and bluefish (if used in the future when bluefish is no longer under a rebuilding plan) that range from slight negative to moderate positive, depending on the specific outcome in any given specifications cycle.

Compared to the other alternatives in this document, Alternative 1B is expected to have less positive impacts on these stocks than Alternative 1A (No Action) as Alternative 1A would aim to prevent RHL overages in all circumstances.
It is challenging to compare Alternative 1B to Alternatives 1C-1E (the binned approaches) without a better understanding of the resulting measures under all alternatives and how harvest and catch might compare to the RHL and ACL each year. As shown in Table 5 in Section 5.1.2, most combinations of expected harvest and biomass under Alternative 1B would result in a change in measures to achieve a percent change in harvest. This may result in more frequent changes in measures than under Alternatives $1 \mathrm{C}-1 \mathrm{E}$ as those alternatives would leave the same measures in place over a range of conditions. However, as the percent change would not always prevent RHL overages, it is challenging to determine if this may have better or worse impacts on the stocks than if measures were left in place over a wider range of conditions (which also would not always aim to prevent RHL overages).

### 7.2.1.3 Impacts of Alternative 1C (Fishery Score Approach) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As previously noted, this alternative may not be used for stocks under a rebuilding plan and is therefore not relevant for the current stock status of bluefish. As such, the impacts summarized below do not consider the current stock status of bluefish. This alternative may be used for bluefish in future years once the stock is no longer in a rebuilding plan.

As described in more detail in Section 5.1.3, under Alternative 1C, multiple stock status and fishery performance indicators would be combined into one Fishery Score to determine the appropriate management measure bin. Measures for each bin would aim to achieve a target level
of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Set 2) deemed appropriate for the stock conditions associated with each bin. As previously stated, harvest, catch, or fishing mortality under any set of measures can be difficult to predict as they are impacted by many factors in addition to measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest, catch, and fishing mortality can vary notably from year to year under the same set of measures. The Council and Commission are supporting the development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest while accounting for other factors such as angler preferences to the extent possible based on available data. These improved tools could be used under all alternatives in this document. Fewer analytical tools are expected to be available in the near future for predicting the impacts of measures on fishing mortality.
For this alternative, the SSC cautioned that setting measures based on the RHL in upcoming years as well as additional considerations about stock status can increase variation in the resulting catches. This is because the information used for the stock status ( $\mathrm{B} / \mathrm{B}_{\text {MSY }}$ and $\mathrm{F} / \mathrm{F}_{\mathrm{MSY}}$ ) indicators under this alternative is already incorporated into the RHL, therefore resulting in "double counting" of this information. This could lead to catch that is too high (compared to what would be necessary to prevent overfishing) when stock status is good and too low when stock status is poor. In addition, the SSC cautioned that the metrics incorporated into the Fishery Score (biomass level, recruitment, fishing mortality, and harvest compared to the RHL) are all correlated, which increases the double counting concerns.
Under this alternative, there are only four possible management outcomes (four bins) across the entire range of possible stock status and fishery conditions. Therefore, the same measures would remain in place over a wide range of conditions, potentially resulting in catch that is too high or too low for longer periods of time than all other alternatives.
For all these reasons, it may not be possible to demonstrate that this alternative would proactively prevent overfishing every year. However, negative stock status indicators (e.g., overfishing occurring, a decline in biomass, and/or decreasing recruitment) can result in movement to a more restrictive bin in future years, which should help contribute to improving stock status over time. In addition, ACL overages would still require an AM response to correct and mitigate for negative impacts of ACL overages. In addition, all four sets of measures can be regularly reviewed and revised as necessary to ensure they are appropriately set. Therefore, depending on the specific outcome in any given specifications cycle, the impacts of this alternative on summer flounder, scup, black sea bass, and bluefish (if used in the future when bluefish is no longer under a rebuilding plan) are expected to range from slight negative (when overfishing occurs) to moderate positive (when overfishing does not occur and when AMs and/or more restrictive measures contribute to positive stock status over the long term).
Compared to all other binned approaches (i.e., Alternatives $1 \mathrm{C}-1 \mathrm{E}$ ), this alternative may have the greatest potential for negative impacts on the stocks because the same measures would remain in place over the widest range of conditions. This could result in harvest, catch, or fishing mortality that is too high for longer periods of time before a change is made compared to Alternatives 1D and 1 E .
Alternative 1 E also has a greater potential for negative impacts than Alternative 1A as those alternatives would aim to allow harvest to meet but not exceed the RHL, which should contribute to the prevention of overfishing on an annual basis.

It is challenging to compare Alternative 1C to Alternative 1B without a better understanding of the resulting measures under these alternatives and how harvest and catch might compare to the RHL and ACL each year. Alternative 1 C is likely to result in less frequent changes in measures than Alternative 1B. However, as neither Alternative 1B or 1C would always prevent RHL overages, and in some cases would require RHL underages, it is unclear if more frequent (Alternative 1B) or less frequent (Alternative 1C) changes would have better or worse impacts on the stocks.

### 7.2.1.4 Impacts of Alternative 1D (Biological Reference Point Approach) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As previously noted, this alternative may not be used for stocks under a rebuilding plan and is therefore not relevant for the current stock status of bluefish. As such, the impacts summarized below do not consider the current stock status of bluefish. This alternative may be used for bluefish in future years once the stock is no longer in a rebuilding plan.
As described in more detail in Section 5.1.4, Alternative 1D includes 13 sets of management measures to cover the entire range of possible stock status and fishery conditions. Determination of the appropriate measure bin in a given specifications cycle would be based on biomass compared to the target level (grouped into four categories) and fishing mortality compared to $\mathrm{F}_{\text {MSY }}$ (grouped into two categories). If these categorical rankings do not change for a second specifications cycle, then consideration would also be given to trend in biomass and recruitment. When overfishing is occurring during the second specifications cycle, consideration would also be given to whether recent RHLs were exceeded. All 13 sets of measures would aim to achieve a target level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Set 2) deemed appropriate for the stock conditions associated with each combination of the metrics listed above. As previously stated, harvest, catch, or fishing mortality under any set of measures are difficult to predict as they are impacted by many factors in addition to measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest, catch, and fishing mortality can vary notably from year to year under the same set of measures. The Council and Commission are supporting the development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. These improved tools could be used under all alternatives in this document. Fewer analytical tools are expected to be available in the near future for predicting the impacts of measures on fishing mortality.
As described in the previous section for Alternative 1C, when the same measures remain in place over a range of stock status conditions and do not aim to prevent RHL overages on an annual basis, they may risk resulting in overfishing in some years. However, under this alternative, negative stock status trends can trigger the use of more restrictive measures. In addition, all 13 sets of measures can be regularly reviewed and revised as necessary to ensure they are appropriately set. Therefore, any negative impacts to stock status may be temporary as this approach could still contribute to increasing biomass to the target level, maintaining biomass at or above the target level, and preventing overfishing over the long term, even if overfishing is not prevented on an annual basis.
Therefore, depending on the specific outcome in any given specifications cycle, the impacts of this alternative on summer flounder, scup, black sea bass, and bluefish (if used in the future
when bluefish is no longer under a rebuilding plan) are expected to range from slight negative (if overfishing is not prevented on an annual basis) to moderate positive (when overfishing does not occur and when more restrictive measures contribute to positive stock status over the long term).
Compared to the other binned approaches (i.e., Alternatives 1C and 1E), this alternative has the most finely tuned management response because the same measures would remain in place over a narrower range of conditions. In addition, this alternative considers a greater number of stock status and fishery indicators and includes a more finely tuned management response than Alternatives 1C and 1E. For these reasons, this alternative is expected to have greater positive impacts on the summer flounder, scup, black sea bass, and bluefish stocks than Alternatives 1C and 1 E . However, this approach is less finely tuned to changing stock conditions than Alternative 1 A as Alternative 1A would not limit changes to only when certain thresholds are crossed. Therefore, Alternative 1A may have greater positive impacts on the stocks than this alternative.
It is challenging to compare Alternative 1D to Alternative 1B without a better understanding of the resulting measures under these alternatives and how harvest and catch might compare to the RHL and ACL each year. Alternative 1D may result in less frequent changes in measures than Alternative 1B. However, as neither Alternative 1B nor 1D would always prevent RHL overages, and in some cases would require RHL underages, it is unclear if more frequent (Alternative 1B) or less frequent (Alternative 1D) changes would have better or worse impacts on the stocks.

### 7.2.1.5 Impacts of Alternative 1E (Biomass Based Matrix Approach) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As previously noted, this alternative may not be used for stocks under a rebuilding plan and is therefore not relevant for the current stock status of bluefish. As such, the impacts summarized below do not consider the current stock status of bluefish. This alternative may be used for bluefish in future years once the stock is no longer in a rebuilding plan.
As described in more detail in Section 5.1.5, under Alternative 1E, biomass compared to the target level (grouped into four categories) and biomass trend (grouped into three categories) would be used to place the stock in one of six management measure bins. Measures for each bin would aim to achieve a target level of recreational harvest, catch, or fishing mortality (depending on the alternative selected from Alternative Set 2) deemed appropriate for the biomass conditions associated with each bin. As previously stated, harvest, catch, or fishing mortality under any set of measures are difficult to predict as they are impacted by many factors in addition to measures, including fishing effort, availability of various target species, economic factors, weather, and other factors. Harvest, catch, and fishing mortality can vary notably from year to year under the same set of measures. The Council and Commission are supporting development of improved statistical analysis tools for predicting the impacts of measures on catch and harvest, while accounting for other factors such as angler preferences to the extent possible based on available data. These improved tools could be used under all alternatives in this document. Fewer analytical tools are expected to be available in the near future for predicting the impacts of measures on fishing mortality.

The SSC cautioned that this alternative does not consider fishing mortality compared to $\mathrm{F}_{\text {MSY }}$ as an indicator for determining the appropriate bin in a given specifications cycle. This could increase the risk of overfishing in some years compared to all other alternatives as all other alternatives consider upcoming RHLs and/or F/FMSY when defining the appropriate target level of harvest or the appropriate management measure bin. By considering only biomass and
biomass trend when determining the appropriate bin and when the stock would move from one bin to another, this alternative risks resulting in catch that is too high (than would be necessary to prevent overfishing) when biomass is high and/or increasing and catch that is too low when biomass is low and/or stable or decreasing.

As previously stated, under this alternative, there are six possible management outcomes (six bins) across the entire range of possible biomass and biomass trend categories. Therefore, similar to Alternative 1 C , the same measures would remain in place over a wide range of conditions, potentially resulting in catch that is too high or too low for longer periods of time compared to all other alternatives except Alternative 1C, which has four bins.

For all these reasons, it may not be possible to demonstrate that this alternative would proactively prevent overfishing every year. Low or declining biomass can result in movement to a more restrictive bin in future years, which should help contribute to improving stock status over time. However, overfishing does not trigger movement to a more restrictive bin unless it also results in a change in biomass or biomass trend category.
ACL overages would still require an AM response to correct and mitigate for negative impacts of ACL overages. In addition, all six sets of measures can be regularly reviewed and revised as necessary to ensure they are appropriately set.

For these reasons, depending on the specific outcome in any given specifications cycle, the impacts of this alternative on summer flounder, scup, black sea bass, and bluefish (if used in the future when bluefish is no longer under a rebuilding plan) are expected to range from slight negative (when overfishing occurs) to moderate positive (when overfishing does not occur and when AMs and/or more restrictive measures contribute to positive stock status over the long term).

This alternative may have greater potential for negative impacts on the stocks than Alternative 1D because the same measures would remain in place over a wider range of conditions and because fewer stock status metrics are considered compared to Alternative 1D.

Compared to Alternative 1C, measures would be more responsive to changing biomass conditions (because there are six bins rather than four). This could be considered a positive impact of Alternative 1E compared to Alternative 1C. However, Alternative 1C considers additional stock status metrics beyond biomass. This could be considered a negative impact of Alternative 1E compared to Alternative 1C.

Alternative 1E has a greater potential for negative impacts than Alternative 1A as Alternative 1A would aim to allow harvest to meet but not exceed the RHL, which should contribute to the prevention of overfishing on an annual basis.

It is challenging to compare Alternative 1E to Alternative 1B without a better understanding of the resulting measures under these alternatives and how harvest and catch might compare to the RHL and ACL each year. Alternative 1E may result in less frequent changes in measures than Alternative 1B. However, as neither Alternative 1B nor 1E would always prevent RHL overages, and in some cases would require RHL underages, it is unclear if more frequent (Alternative 1B) or less frequent (Alternative 1E) changes may have better or worse impacts on the stocks.

### 7.2.2 Impacts of Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As described in more detail in Section 5.2, the alternatives in Alternative Set 2 consider whether the measures assigned to each management measure bin in Alternatives 1C-1E would aim to achieve a target level of recreational harvest (Alternative 2A), recreational catch (Alternative 2B), or recreational fishing mortality (Alternative 2C) that is appropriate for the stock conditions associated with that bin. Because the target metric is intended to reflect stock conditions, all three alternatives should have moderate positive impacts on the summer flounder, scup, black sea bass, and bluefish stocks by contributing to the prevention of overfishing, maintaining biomass above the target level, or building biomass towards the target over time. The direction and magnitude of these moderate positive impacts is not expected to vary across the three alternatives.

As previously noted, Alternatives 1B-1E are not relevant for the current stock status of bluefish. They may only be used for bluefish once bluefish is no longer in a rebuilding plan. As such, the impacts summarized above for bluefish are potential future impacts but are not relevant for the current stock status of bluefish.

### 7.2.3 Impacts of Alternative Set 3 (Conservation Equivalency) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

Alternative Set 3 considers whether states or regional groupings of states may propose different measures than those which would otherwise be implemented. Across all three alternatives, measures must have the same expected impact on the target stocks (e.g., the same expected harvest). These alternatives only define the degree of flexibility that states have in proposing alternative measures and therefore are expected to have no impacts on the summer flounder, scup, black sea bass, and bluefish stocks as they are administrative in nature.

### 7.2.4 Impacts of Alternative Set 4 (Accountability Measures Under Alternatives 1B, 1C-1, and 1E-1) on Summer Flounder, Scup, Black Sea Bass, and Bluefish

As described in more detail in Section 5.4, Alternative Set 4 considers a change to one specific component of the reactive AMs under Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$. Both alternatives 4A and 4 B are only relevant when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold.

Under Alternative 4A, catch relative to the ABC would also be considered when determining the appropriate magnitude of the response to the ACL overage. Under Alternative 4B, the most recent estimate of $\mathrm{F} / \mathrm{F}_{\mathrm{MSY}}$ would be considered, rather than catch relative to the ABC . In both cases, the response to the overage would be more strict if the ABC or $\mathrm{F}_{\text {MSY }}$ was also exceeded. If only the recreational ACL was exceeded, the response to the overage would be less strict (see Sections 5.1.2.3, 5.1.3.1, and 5.1.5.1 for more details).

Under both Alternatives 4A and 4B, AMs would be used to mitigate for the impacts of ACL overages when they occur. In this sense, both alternatives should contribute to either maintaining a positive stock status or rebuilding towards a positive stock status for all four species over the long term. Therefore, both Alternatives 4A and 4B are expected to have moderate positive impacts for all four species.

Alternative 4B allows for consideration of more recent information than Alternative 4A. This is because the most recent estimate of $\mathrm{F} / \mathrm{F}_{\text {MSY }}$ in the year(s) when the ACL overage(s) occurred
(Alternative 4B) incorporates more recent information than that used to set past ABCs (Alternative 4A). In some cases, incorporation of additional information into stock assessments, or other changes to the stock assessments, can suggest past ABCs were set higher or lower than may have been appropriate if the updated stock assessment had been available at the time. Considering $\mathrm{F} / \mathrm{F}_{\text {MSY }}$ as an indication of whether past ACL overages contributed to overfishing based on the most recent information can help address this issue. As such, the impacts of Alternative 4B on summer flounder, scup, black sea bass, and bluefish are expected to be more positive than those of Alternative 4A.

### 7.3 Impacts to Non-Target Species

The following sections describe the expected impacts of the alternatives on non-target species.

### 7.3.1 Impacts of Alternative Set 1 (Process for Setting Recreational Measures) and Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E) on Non-Target Species

As described in more detail in Sections 5.1 and 5.2, under all alternatives in Alternative Sets 1 and 2, the recreational fisheries would be constrained through the use of bag, size, and season limits which would aim to achieve a specified target (i.e., the RHL, a percent change in expected harvest, or a level of recreational harvest, recreational catch, or recreational fishing mortality deemed appropriate for the relevant management measure bin, depending on the alternative).
Alternative Sets 1 and 2 define the process for setting measures, but they do not implement specific measures. Measures and their expected impacts on non-target species will be analyzed and implemented through separate future specifications actions. As previously stated, impacts of the recreational fisheries on non-target species are primarily driven by recreational fishing effort. Fishing effort will be impacted by the measures (and other factors) but is not directly impacted by the process used to set those measures. For these reasons, all alternatives in Alternative Sets 1 and 2 are not expected to impact non-target species as they simply define the process for setting recreational measures and therefore are administrative in nature in regard to their impacts on non-target species.

### 7.3.2 Impacts of Alternative Set 3 (Conservation Equivalency) on Non-Target Species

Alternative Set 3 considers whether states or regional groupings of states may propose different measures than those which would otherwise be implemented through the specifications process. Across all three alternatives, measures must have the same expected impact on the target stocks (e.g., the same expected harvest). These alternatives only define the degree of flexibility that states have in proposing alternative measures and therefore are expected to have no impacts on non-target species as they are largely administrative in nature.

### 7.3.3 Impacts of Alternative Set 4 (Accountability Measures Under Alternatives 1B, 1C-1, and 1E-1) on Non-Target Species

As described in more detail in Section 5.4, Alternative Set 4 considers a change to one specific component of the reactive AMs under Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$. Both alternatives 4 A and $4 B$ are only relevant when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold.
Under Alternative 4A, catch relative to the ABC would also be considered when determining the appropriate response to the ACL overage. Under Alternative 4B, the most recent estimate of

F/F MSY would be considered, rather than catch relative to the ABC . In both cases, the response to the overage would be more strict if the ABC or $\mathrm{F}_{\text {MSY }}$ was also exceeded. If only the recreational ACL was exceeded, the response to the overage would be less strict (see Sections 5.1.2.3, 5.1.3.1, and 5.1.5.1 for more details).

Both Alternatives 4A and 4B could result in reduced fishing effort in years when AMs are implemented. A reduction in fishing effort could reduce impacts to non-target species. However, Alternatives 4A and 4B consider only the metrics used for determining the magnitude of the AM response in specific circumstances. The decision on the appropriate metric is not expected to have impacts on non-target species as AMs would still be used under both alternatives. It is not possible to predict differences in the magnitude of AM responses, and therefore of changes in fishing effort, under these two alternatives as this could vary on a case-by-case basis. For these reasons, both Alternatives 4A and 4B are expected to have no impacts on non-target species.

### 7.4 Impacts to Habitat

The following sections describe the expected impacts of the alternatives on habitat.

### 7.4.1 Impacts of Alternative Set 1 (Process for Setting Recreational Measures) and Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E) on Habitat

As described in more detail in Sections 5.1 and 5.2, under all alternatives in Alternative Sets 1 and 2 , the recreational fisheries would be constrained through the use of bag, size, and season limits which would aim to achieve a specified target (i.e., the RHL, a percent change in expected harvest, or a level of recreational harvest, recreational catch, or recreational fishing mortality deemed appropriate for the relevant management measure bin, depending on the alternative).

Alternative Sets 1 and 2 define the process for setting measures, but they do not implement specific measures. Measures and their expected impacts on habitat will be analyzed and implemented through separate future specifications actions. As previously stated, impacts of the recreational fisheries on habitat are primarily driven by recreational fishing effort and the spatial distribution of that effort. Fishing effort will be impacted by the measures (and other factors) but is not directly impacted by the process used to set those measures. For these reasons, all alternatives in Alternative Sets 1 and 2 are not expected to impact habitat as they simply define the process for setting recreational measures and therefore are administrative in nature in regard to their impacts on habitat.

### 7.4.2 Impacts of Alternative Set $\mathbf{3}$ (Conservation Equivalency) on Habitat

Alternative Set 3 considers whether states or regional groupings of states may propose different measures than those which would otherwise be implemented. Across all three alternatives, measures must have the same expected impact on the target stocks (e.g., the same expected harvest). These alternatives only define the degree of flexibility that states have in proposing alternative measures and therefore are expected to have no impacts on habitat as they are administrative in nature.

### 7.4.3 Impacts of Alternative Set 4 (Accountability Measures Under Alternatives 1B, 1C-1, and 1E-1) on Habitat

As described in more detail in Section 5.4, Alternative Set 4 considers a change to one specific component of the reactive AMs under Alternatives $1 \mathrm{~B}, 1 \mathrm{C}-1$, and $1 \mathrm{E}-1$. Both alternatives 4A and

4 B are only relevant when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold.

Under Alternative 4A, catch relative to the ABC would also be considered when determining the appropriate response to the ACL overage. Under Alternative 4B, the most recent estimate of F/FMSY would be considered, rather than catch relative to the ABC . In both cases, the response to the overage would be more strict if the ABC or $\mathrm{F}_{\text {MSY }}$ was also exceeded. If only the recreational ACL was exceeded, the response to the overage would be less strict (see Sections 5.1.2.3, 5.1.3.1, and 5.1.5.1 for more details).

Both Alternatives 4A and 4B could result in reduced fishing effort in years when AMs are implemented. A reduction in fishing effort could reduce impacts to habitat. However, Alternatives 4A and 4B consider only the metrics used for determining the magnitude of the AM response in specific circumstances. The decision on the appropriate metric is not expected to impact habitat as AMs would still be used under both alternatives. It is not possible to predict differences in the magnitude of AM responses, and therefore of changes in fishing effort, under these two alternatives as this could vary on a case-by-case basis. For these reasons, both Alternatives 4A and 4B are expected to have no impacts on habitat.

### 7.5 Impacts to Protected Species

The following sections describe the expected impacts of the alternatives on protected species.

### 7.5.1 Impacts of Alternative Set 1 (Process for Setting Recreational Measures) and Alternative Set 2 (Target Metric for Setting Measures Under Alternatives 1C-1E) on Protected Species

As described in more detail in Sections 5.1 and 5.2, under all alternatives in Alternative Sets 1 and 2, the recreational fisheries would be constrained through the use of bag, size, and season limits (i.e., measures) which would aim to achieve a specified harvest, catch, or fishing mortality target (depending on the alternative). Alternative Sets 1 and 2 define the process for setting measures, but they do not implement specific measures. Fishing behavior and effort are influenced by the measures, but they are not impacted by the process used to set measures. Therefore, all alternatives in Alternative Sets 1 and 2 are considered procedural and, therefore, administrative in nature regarding their impacts on protected species.
Impacts of the recreational fisheries on protected species are primarily driven by recreational fishing effort and the spatial distribution of that effort. Specifically, interaction risks to protected species are strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the temporal and spatial overlap between the fishery and listed species. As Alternative Sets 1 and 2 are administrative in nature, they will have no impact to protected species because none of these alternatives, in and of themselves, changes fishing effort or behavior. That is, the degree in which effort or fishing behavior may change, and in turn, the level of associated interaction risk to protected species, would not be directly linked to the process for setting recreational measures under Alternatives Set 1 or 2. For these reasons, all alternatives in Alternative Sets 1 and 2 are not expected to impact protected species. Specific measures, and the associated expected impacts on protected species, will be analyzed and implemented through separate future specifications actions.

### 7.5.2 Impacts of Alternative Set 3 (Conservation Equivalency) on Protected Species

Alternative Set 3 considers whether states or regional groupings of states may propose different measures than those which would otherwise be implemented. Across all three alternatives, measures must have the same expected impact on the target stocks (e.g., the same expected harvest). These alternatives only define the degree of flexibility that states have in proposing alternative measures and therefore are expected to have no impacts on protected species as they are administrative in nature. See section 7.5.1 for additional information on administrative measures and resulting impacts to protected species.

### 7.5.3 Impacts of Alternative Set 4 (Accountability Measures Under Alternatives 1B, 1C-1, and 1E-1) on Protected Species

As described in more detail in Section 5.4, Alternative Set 4 considers a change to one specific component of the reactive AMs under Alternatives 1B, 1C-1, and 1E-1. Both Alternatives 4A and 4 B are only relevant when a reactive AM has been triggered by a recreational ACL overage (or overages) and the most recent biomass estimate is between the target and the threshold.
Under Alternative 4A, catch relative to the ABC would be considered when determining the appropriate AM response. Under Alternative 4B, the most recent estimate of $\mathrm{F} / \mathrm{F}_{\text {MSY }}$ would be considered, rather than catch relative to the ABC . In both cases, the AM response would be more strict if the $A B C$ or $F_{\text {MSY }}$ was also exceeded. If only the recreational ACL was exceeded, the response would be less strict (see Sections 5.1.2.3, 5.1.3.1, and 5.1.5.1 for more details). Under both alternatives, there would be an AM response regardless of the result of the relevant comparison as these alternatives are only relevant when an AM has been triggered and a response is needed. Both alternatives consider only the metric used for determining the appropriate degree of the response. As described in more detail in Section 7.1.4, it is not possible to predict if either Alternative 4 A or 4 B would result in more frequent use of a stricter AM response as this may vary on a case-by-case basis. For these reasons, Alternatives 4A and 4B are not expected to impact protected species.

Both Alternatives 4A and 4B could result in reduced fishing effort in years when AMs are implemented. A reduction in fishing effort could reduce impacts to protected species. Impacts of the recreational fisheries on protected species are primarily driven by recreational fishing effort and the spatial distribution of that effort. Specifically, interaction risks to protected species are strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the temporal and spatial overlap between the fishery and listed species. As Alternatives 4A and 4B are administrative in nature, they will have no impact to protected species because neither alternative, in and of itself, changes fishing effort or behavior. That is, the degree in which effort or fishing behavior may change, and in turn, the level of associated interaction risk to protected species, would not be directly linked to the metric used for determining the appropriate magnitude of an AM response, as described above. For these reasons, Alternatives 4A and 4B are not expected to impact protected species.

### 7.6 Cumulative Effects Analysis

A cumulative effects analysis is required by the Council on Environmental Quality ( 40 CFR part 1508.7) and NOAA policy and procedures in NOAA Administrative Order 216-6A (Companion Manual, January 13, 2017). The purpose of the cumulative effects analysis is to consider the combined effects of many actions on the human environment over time that would be missed if
each action were evaluated separately. Council on Environmental Quality guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective. Rather, the intent is to focus on those effects that are truly meaningful. The following sections address the significance of the expected cumulative impacts as they relate to the federally managed summer flounder, scup, black sea bass, and bluefish fisheries.

A cumulative effects assessment makes effect determinations based on a combination of: 1) impacts from past, present, and reasonably foreseeable future actions; 2) the baseline conditions of the VECs (the combined effects from past, present, and reasonably foreseeable future actions plus the present condition of the VEC); and 3) impacts of the alternatives under consideration for this action.

### 7.6.1.1 Consideration of the VECs

The valued ecosystem components for the summer flounder, scup, black sea bass, and bluefish fisheries are generally the "place" where the impacts of management actions occur and are identified in Section 6.

- Human communities
- Summer flounder, scup, black sea bass, and bluefish
- Non-target species
- Habitat
- Protected species (ESA and MMPA protected species)

The cumulative effects analysis identifies and characterizes the impacts on the VECs by the alternatives under consideration when analyzed in the context of other past, present, and reasonably foreseeable future actions.

### 7.6.1.2 Geographic Boundaries

The analysis of impacts focuses on actions related to recreational summer flounder, scup, black sea bass, and bluefish fisheries. The Western Atlantic Ocean is the core geographic scope for each VEC. The core geographic scope for managed species is the management unit (Section 4.3). For non-target species, that range may be expanded and would depend on the range of each species in the Western Atlantic Ocean. For habitat, the core geographic scope is focused on EFH within the EEZ but includes all habitat utilized by summer flounder, scup, black sea bass, bluefish, and non-target species in the Western Atlantic Ocean. The core geographic scope for protected species is their range in the Western Atlantic Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities in coastal states from Maine through North Carolina directly involved in recreational fisheries for summer flounder, scup, and black sea bass, and Maine through Florida for the recreational bluefish fisheries (Section 6.1).

### 7.6.1.3 Temporal Boundaries

Overall, while the effects of the historical summer flounder, scup, black sea bass, and bluefish fisheries are important and considered in the analysis, the temporal scope of past and present actions for summer flounder, scup, black sea bass, bluefish non-target species and other fisheries, habitat, and human communities is primarily focused on actions that occurred after FMP implementation (1988 for summer flounder, 1996 for scup, 1997 for black sea bass, 1990 for bluefish). An assessment using this timeframe demonstrates the changes to resources and the
human environment that have resulted through management under the Council process and through U.S. prosecution of the fishery. For protected species, the scope of past and present actions is focused on the 1980s and 1990s (when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ) through the present.

The temporal scope of future actions for all VECs extends to 2028, five years beyond the intended initial implementation of this action. The dynamic nature of resource management for these species and lack of information on projects that may occur in the future make it difficult to predict impacts beyond this timeframe with any certainty. The impacts discussed in Section 7.6.4 are focused on the cumulative effects of the proposed action (i.e., the suite of preferred alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

### 7.6.2 Relevant Actions Other Than Those Proposed in this Document

This section summarizes the past, present, and reasonably foreseeable future actions and effects that are relevant for this cumulative effects assessment. Some past actions are still relevant to the present and/or future actions.

### 7.6.2.1 Fishery Management Actions

## Summer Flounder, Scup, and Black Sea Bass FMP and Bluefish FMP Actions

Past, present, and reasonably foreseeable future actions for summer flounder, scup, and black sea bass management include the establishment of the original FMP, all subsequent amendments and frameworks, and the setting of annual specifications (ACLs and measures to constrain catch and harvest). Key actions are described below.

## Human Communities

Past and Present Actions: All actions taken under the Summer Flounder, Scup, and Black Sea Bass FMP and the Bluefish FMP have impacted human communities. None were developed to primarily address elements of fishing-related businesses and communities, but many actions included specific measures designed to improve flexibility and efficiency. In general, actions that prevent overfishing have long-term economic benefits for businesses and communities that depend on those resources; however, many actions may lead to short-term negative economic impacts by reducing landings.

## Summer Flounder, Scup, and Black Sea Bass FMP

Summer Flounder, Scup, and Black Sea Bass Amendments 2, 8, 9, and 10 (1993, 1996, and 1997) had major implications for human communities by limiting participation and allocating the resources by state, and imposing other gear and permitting requirements. Amendments 8 and 9 incorporated scup and black sea bass into the summer flounder FMP and implemented a number of management measures for scup and black sea bass including commercial quotas, commercial gear requirements, minimum size limits, RHLs, and permit and reporting requirements. These major actions resulted in mixed impacts to human communities by imposing costs and eliminating some participants, but improving management's ability to control harvest and maintain positive biological conditions for the stock.
Summer Flounder, Scup, and Black Sea Bass Frameworks 2 and 6 (2001 and 2004) for the recreational fishery provided overall positive benefits to human communities by allowing for increased management flexibility within the constraints of ACLs.

Amendment 21 revised the summer flounder commercial quota allocation starting January 1, 2021 and modified the FMP objectives for summer flounder. This action included a range of expected social and economic impacts from high (but not significant) negative to high (but not significant) positive depending on the state, vessel, or other stakeholder entity affected.
Amendment 22 (2022) revised the allocations between the commercial and recreational sectors to reflect the most recent data on the years used to set the original allocations, and to establish catch-based allocations for all three species.

Amendment 23 revised the allocations of the black sea bass commercial quota among the states. These allocations will now be partially based on the distribution of the stock and partially based on the original state allocations first implemented in 2003. The allocations will be updated through the specifications process each time updated information on biomass distribution is available. These revised allocations went into effect through the Commission's FMP in 2022. They are anticipated to be added to the Council's FMP in the near future. The different implementation time frames for the Council and Commission FMPs will not change the impacts on the fisheries as the revised allocations are already in place through the Commission FMP.

## Bluefish FMP

The original FMP for bluefish was established in 1990. Amendment 1 (2000) brought the FMP into compliance with new and revised National Standards and other required provisions of the Sustainable Fisheries Act, implemented a rebuilding plan, and required that a commercial quota and recreational harvest limit be based on projected stock size estimates as derived from the latest stock assessment information.

Amendment 7 (2021) revised the goals and objectives of the FMP, reallocated quota between the commercial and recreational fisheries, reallocated commercial quota among the states, implemented a rebuilding plan, revised the sector quota transfer process, and revised how management uncertainty is applied during the specifications process.

## Both FMPs

Summer Flounder, Scup, and Black Sea Bass Amendment 15 and Bluefish Amendment 3 (2011) established ACLs and AMs to bring the FMP into compliance with the new requirements of the MSA, establishing a control rule for setting annual fishery specifications. This action and associated annual specifications resulted in constraints on effort and revenues in the fishery; however, ACLs and other measures resulted in positive impacts on the stocks that will continue to positively impact human communities in the future.

Reasonably Foreseeable Future Actions: As previously stated, the Council and the Commission's Policy Board initiated an amendment to consider options for managing for-hire recreational fisheries separately from other recreational fishing modes (referred to as sector separation) and options related to recreational catch accounting, such as private angler reporting and enhanced vessel trip report requirements. These management actions aim to increase stability in recreational measures while continuing sustainable management of the fishery, which should benefit the recreational community. Sector separation could allow management measures to be tailored to the unique needs of the party/charter sector and private recreational fishing sectors.
Over the temporal scope of the future effects of this action (5 years), the Council will continue to implement annual specifications to manage the resource for sustainability, which are expected to
have moderate negative to moderate positive impacts on fishing communities depending on the total catch limits.

## Target Species (Summer Flounder, Scup, Black Sea Bass, and Bluefish)

Past and Present Actions: The original joint Council/Commission Summer Flounder FMP was implemented in 1988. Amendment 2 (1993) enacted the bulk of the fishery management program including fishery allocations and regulations to reduce fishing mortality. Amendments 8 and 9 (both in 1996) added scup and black sea bass to the Summer Flounder FMP with commercial quotas, RHLs, minimum fish size limits, gear restrictions, permits, and reporting requirements. These actions had positive impacts on target species by controlling fishing mortality, rebuilding the stocks, and contributing to long-term sustainable management of the stocks.

Additional amendments and framework actions have allowed for or required reduced fishing mortality rates for these species, commercial quota transfers, research set-aside, gear restrictions (including implementation of the scup gear restricted areas), protection of the spawning classes, and reducing discards. These actions had positive impacts on the stocks.
Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass FMP and Amendment 3 to the Bluefish FMP established ACLs and AMs consistent with the 2007 revisions to the Magnuson-Stevens Act. Related to this requirement, the Council annually implements or reviews catch and landings limits for each species consistent with the recommendations of the SSC, and reviews other management measures as necessary to prevent catch limits from being exceeded and to meet the objectives of the FMP.
Standardized Bycatch Reporting Methodology amendments, which cover Federal waters fisheries managed by the New England and/or Mid-Atlantic Councils, have updating the monitoring programs for federally managed species. The first Standardized Bycatch Reporting Methodology amendment became effective in 2008, and an update to these measures was finalized in June 2015 (Amendment 17 to the Summer Flounder, Scup, and Black Sea Bass FMP and Amendment 5 to the Bluefish FMP; 80 FR 37182). The updated regulations created a new prioritization process for allocation of observers, improving monitoring of managed resources. The Standardized Bycatch Reporting Methodology amendments had indirect positive impacts on target species by improving monitoring for total removals.

The Council's Unmanaged Forage Omnibus Amendment, implemented in 2017, established a commercial possession limit for over 50 forage species which were previously unmanaged in federal waters. This action has ongoing positive impacts to target, non-target, and protected species by protecting many forage species and limiting the expansion of any existing fishing effort on forage stocks.
Reasonably Foreseeable Future Actions: As previously stated, the Council and Commission's Policy Board initiated an amendment to consider options for managing for-hire recreational fisheries separately from other recreational fishing modes (referred to as sector separation) and options related to recreational catch accounting, such as private angler reporting and enhanced vessel trip report requirements. These management actions will contribute to continued sustainable management of the stocks.

## Non-Target Species

Past and Present Actions: Summer Flounder, Scup, and Black Sea Bass FMP and Bluefish FMP actions in the past and present have had mostly positive impacts on non-target species. Specific
gear and area restrictions have reduced bycatch of various non-target species. Effort controls and increased efficiency of the fleet have also likely reduced impacts on non-target species. Section 6.3 lists the most recent stock status of the primary non-target species.

The Council's Unmanaged Forage Omnibus Amendment, implemented in 2017, established a commercial possession limit for over 50 forage species which were previously unmanaged in federal waters. This action has ongoing positive impacts to target, non-target, and protected species by protecting many forage species and limiting the expansion of any existing fishing effort on forage stocks.

## Physical Habitat and EFH

Past and Present Actions: Amendment 12 (1998) designated EFH for summer flounder, scup, and black sea bass. Amendment 1 (1998) designated EFH for bluefish. These amendments resulted in indirect positive impacts on habitat and the summer flounder, scup, black sea bass, and bluefish stocks via the ability to identify, monitor, and protect important habitats for these species.
Actions implemented in the Summer Flounder, Scup, and Black Sea Bass FMP that affected species with overlapping EFH were considered Amendment 13 (2002). The analysis in Amendment 13 indicated that no management measures were needed to minimize impacts to EFH because the trawl fisheries for summer flounder, scup, and black sea bass in federal waters are conducted primarily in high energy mobile sand and bottom habitat where gear impacts are minimal and/or temporary in nature. The principal gears used in the recreational fisheries for summer flounder, scup, and black sea bass are rod and reel and handline. These gears have minimal adverse impacts on EFH in the region (Stevenson et al. 2004).

Reasonably Foreseeable Future Actions: The Council has multiple ongoing habitat initiatives that are likely to positively impact habitat in the management unit in the reasonably foreseeable future. The Northeast Regional Marine Fish Habitat Assessment is an ongoing project to describe and characterize estuarine, coastal, and offshore fish habitat distribution and quality in the Northeast. The project aims to align habitat science goals and priorities with human and financial resources to develop habitat science products that support an assessment. The Council is also currently reviewing EFH designations and scientific information on habitat for Council-managed species. Based on this review, the Council may choose to revise EFH descriptions, designate HAPCs, or implement other habitat management measures. These initiatives are expected to have positive impacts on habitat by improving the Council's ability to monitor and prioritize protections for important habitats.

## Protected Species

Past and Present Actions: NMFS has implemented specific actions to reduce injury and mortality of protected species from gear interactions.

NMFS developed an Atlantic trawl gear take reduction strategy (Strategy) for long-finned pilot whales, short-finned pilot whales, white-sided dolphins, and common dolphins. The Strategy identifies voluntary measures for trawl fisheries to reduce the incidental capture of small cetaceans. In addition, NMFS requires summer flounder trawlers fishing in the summer flounder fishery-sea turtle protection area to use turtle excluder devices (50 CFR 223.206) in their trawl gear. Turtle excluder devices allow sea turtles to escape the trawl net, reducing injury and mortality resulting from capture in the net. NMFS has also implemented regulations, pursuant to
the Harbor Porpoise Take Reduction Plan, Bottlenose Dolphin Take Reduction Plan, and Atlantic Large Whale Take Reduction Plan, to reduce serious injury and mortality of specific marine mammal species in commercial fixed gear (e.g., trap/pot and gillnet) fisheries. These voluntary or regulatory measures have had slight to moderate positive impacts on these protected species by reducing the number of interactions with fishing gear.

Reasonably Foreseeable Future Actions: The Atlantic Large Whale Take Reduction Plan recently completed their scoping process for phase two of the plan focusing on risk reduction in U.S. East Coast gillnet, Atlantic mixed species trap/pot, and Northeast and Mid-Atlantic lobster/Jonah crab trap/pot fisheries. This is part of ongoing efforts to reduce the risk of entanglement to right, humpback, and fin whales in U.S. East Coast waters (see previous section). M

In 2022, NOAA Fisheries held various forums to gather information from the public, fishing industry, and other stakeholder groups to inform any future measures for reducing sea turtle bycatch in trawl fisheries, including the summer flounder trawl fishery. Potential considerations to reduce sea turtle bycatch included ideas such as geographically extending the requirement of turtle excluder devices northward, other gear modifications, or reduced tow times. ${ }^{22}$

In addition, in 2022, NOAA Fisheries released a draft Action Plan to reduce Atlantic sturgeon bycatch in gillnet fisheries by 2024. The Action Plan identifies a suite of recommendations to NOAA Fisheries, the New England Fishery Management Council, and the Mid-Atlantic Fishery Management Council that should be considered, refined, and implemented in order to reduce Atlantic sturgeon bycatch in subject fisheries by 2024.

These future measures would likely have some degree of positive impacts on these protected species by reducing the number of interactions with fishing gear, and therefore, reducing the level of injury and mortality to these protected species.

## Other Fishery Management Actions

In addition to the Summer Flounder, Scup, and Black Sea Bass FMP and Bluefish FMP, there are many other FMPs and associated fishery management actions for other species that impacted these VECs over the temporal scale described in Section 7.6.1.3. These include FMPs managed by the Mid-Atlantic Fishery Management Council, New England Fishery Management Council, Atlantic States Marine Fisheries Commission, and to a lesser extent the South Atlantic Fishery Management Council. Omnibus amendments are also frequently developed to amend multiple FMPs at once. Actions associated with other FMPs and omnibus amendments have included measures to regulate fishing effort for other species, measures to protect habitat and forage species, and fishery monitoring and reporting requirements.

For example, the New England Fishery Management Council's omnibus habitat amendment revised EFH and habitat area of particular concern designations for NEFMC-managed species; revised or created habitat management areas, including gear restrictions to protect vulnerable habitat from fishing gear impacts; and established dedicated habitat research areas. This action is expected to have overall positive impacts on habitat and EFH, with expected long-term positive

[^16]implications for target and non-target species, while having mixed socioeconomic impacts on various user groups.

Other FMP actions have had positive long-term cumulative impacts on managed and non-target species because they constrain fishing effort and manage stocks at sustainable levels. As previously stated, constraining fishing effort can have negative short-term socioeconomic impacts and long-term positive impacts. These actions have typically had slight negative impacts on habitat, due to continued fishing operations preventing impacted habitats from recovering; however, some actions had long-term positive impacts through designating or protecting important habitats. FMP actions have also had a range of impacts on protected species, including generally slight negative impacts on ESA-listed species, and slight negative to slight positive impacts on non ESA-listed marine mammals, depending on the species.

## Fishery Management Action Summary

The Council has taken many actions to manage commercial and recreational fisheries. The MSA is the statutory basis for federal fisheries management. The cumulative impacts on the VECs of past, present, and reasonably foreseeable future federal fishery management actions under the MSA should generally be associated with positive long-term outcomes because they constrain fishing effort and manage stocks at sustainable levels. Constraining fishing effort through regulatory actions can have negative short-term socioeconomic impacts. These impacts are sometimes necessary to bring about long-term sustainability of a resource, and as such should promote positive effects on human communities in the long-term. Generally, these actions have had slight negative impacts on habitat, due to continued fishing operations which impact physical habitat; however, some actions have had direct or indirect long-term positive impacts on habitat by protecting important habitats. FMP actions have also had a range of impacts on protected species, including generally slight negative impacts on ESA-listed species, and a range of impacts on non ESA-listed marine mammals from slight negative to slight positive, depending on the species.

### 7.6.2.2 Non-Fishing Impacts

## Other Human Activities

Non-fishing activities that occur in the marine nearshore and offshore environments and connected watersheds can cause loss or degradation of habitat and/or affect the species that utilize those areas. The impacts of most nearshore, human-induced, non-fishing activities tend to be localized in the areas where they occur, although effects on highly mobile species could be felt throughout their populations. For offshore projects, some impacts may be localized while others may have regional influence, especially for larger projects. The following discussion of impacts is based on past assessments of activities and assumes these activities will continue as projects are proposed.
Examples of non-fishing activities include point source and non-point source pollution, shipping, dredging/deepening, wind energy development, oil and gas development, construction, and other activities. Specific examples include at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of offshore wind energy projects, and bulk transportation of petrochemicals. Episodic storm events and the restoration activities that follow can also cause impacts. The impacts from these activities primarily stem from habitat loss and alteration due to human interaction or natural disturbances. These activities are widespread and can have localized impacts on habitat related to accretion of sediments, pollutants, habitat conversion, and shifting
currents and thermoclines. For protected species, primary concerns associated with non-fishing activities include vessel strikes, dredge interactions (especially for sea turtles and sturgeon), and underwater noise. These activities have both direct and indirect impacts on protected species. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the productivity of managed species, non-target species, and protected species. Decreased habitat suitability tends to reduce the tolerance of these VECs to the impacts of fishing effort. Non-fishing activities can cause target, non-target, and protected species to shift their distributions away from preferred areas and may also lead to decreased reproductive ability and success (e.g., from current changes, spawning disruptions, and behavior changes), disrupted or modified food web interactions, and increased disease. While localized impacts may be more severe, the overall impact on the affected species and their habitats on a population level is unknown, but likely to have impacts that mostly range from no impact to slight negative, depending on the species and activity.
Non-fishing activities permitted by other federal agencies (e.g., beach nourishment, offshore wind facilities) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR 600.930). NMFS and the eight regional fishery management councils engage in this review process by making comments and recommendations on federal or state actions that may affect habitat for their managed species. Agencies need to respond to, but do not necessarily need to adopt these recommendations. Habitat conservation measures serve to potentially minimize the extent and magnitude of indirect negative impacts federally-permitted activities could have on resources under NMFS' jurisdiction. In addition to guidelines mandated by the MSA, NMFS evaluates non-fishing effects during the review processes required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by federal, state, and local authorities. Non-fishing activities must also meet the mandates under the ESA, specifically Section 7(a)(2), ${ }^{23}$ which ensures that agency actions do not jeopardize the continued existence of endangered species and their critical habitat.

In recent years, offshore wind energy and oil and gas exploration have become more relevant activities in the Greater Atlantic region. They are expected to impact all VECs, as described below.

## Impacts of Offshore Wind Energy Development on Target, Non-target, and Protected Species and the Physical Environment

Offshore wind energy construction activities may have both direct and indirect impacts on marine species, ranging from temporary changes in distribution to behavior changes, injury, or mortality. Impacts could occur from changes to habitat in the areas of wind turbines, offshore substations, and cable corridors and increased vessel traffic to and from these areas. Species that reside in affected areas year round may experience different impacts than species that seasonally reside in or migrate through these areas. Some species that typically reside in areas where wind energy structures are installed may return to the area and adapt to habitat changes after construction is complete. Inter-array and export cables will generate electromagnetic fields,

[^17]which can affect patterns of movement, spawning, and recruitment success for various species. Effects will depend on cable type, transmission capacity, burial depth, and proximity to other cables. Substantial structural changes in habitats associated with cables are not expected unless cables are left unburied (see below). However, the cable burial process may alter sediment composition along the corridor, thereby affecting infauna and emergent biota. Taormina et al. (2018) provide a review of various cable impacts, and Hutchinson et al. (2020) and Taormina et al. (2020) examine the effects of electromagnetic fields.

The full build out of offshore wind projects in currently leased areas will result in broad habitat alteration. For example, wind turbine and offshore substation foundations may alter hydrodynamics of the area, which may affect primary productivity and physically change the distribution of prey and larvae. It is not clear how these changes will affect the reproductive success of marine species. Scour and sedimentation could have negative effects on egg masses that attach to the bottom. Benthic habitat will be altered due to the placement of scour protection at wind turbine and offshore substation foundations and over cables that are not buried to target depth in the sediment, converting soft substrates into hard substrates. This could alter species composition and predator/prey relationships by increasing favorable habitat for some species and decreasing habitat for others. The placement of wind turbines and offshore substations will also establish new vertical structure in the water column, which could serve as artificial reefs for bottom species, fish aggregating devices for pelagic species, and substrate for the colonization of other species (e.g., mussels). Various authors have studied these types of effects (e.g., Bergström et al. 2013, Dannheim et al. 2019, Degraer et al. 2019, Langhamer 2012, Methratta and Dardick 2019, Stenberg et al. 2015).

Elevated levels of sound produced during site assessment activities, construction, and operation of offshore wind facilities will impact the soundscape. ${ }^{24}$ Temporary acute noise impacts from construction activity could impact reproductive behavior and migration patterns for some species. The long-term impact of operational noise from turbines may also affect behavior of fish and prey species, through both vibrations in the immediate area surrounding them in the water column, and through the foundation into the substrate. Depending on the sound frequency and source level, noise impacts to species may be direct or indirect (Finneran 2015, Finneran 2016, Nowacek et al. 2007, NRC 2000, NRC 2003, NRC 2005, Madsen et al. 2006, Piniak 2012, Popper et al. 2014, Richardson et al. 1995, Thomsen et al. 2006). Exposure to underwater noise can directly affect species through behavioral modification (avoidance, startle, spawning) or injury (sound exposure resulting in internal damage to hearing structures or internal organs; Bailey et al. 2010, Bailey et al. 2014, Bergström et al. 2014, Ellison et al. 2011, Ellison et al. 2018, Forney et al. 2017, Madsen et al. 2006, Nowacek et al. 2007, NRC 2003, NRC 2005, Richardson et al. 1995, Romano et al. 2004, Slabbekoorn et al. 2010, Thomsen et al. 2006, Wright et al. 2007). Indirect effects are likely to result from changes to the acoustic environment, which may affect the completion of essential life functions for some species (e.g., migrating, breeding, communicating, resting, foraging; Forney et al. 2017, Richardson et al. 1995, Slabbekoorn et al. 2010, Thomsen et al. 2006). ${ }^{25}$

Wind energy survey and construction activities, as well as operations throughout the life of the projects will substantially affect NMFS scientific research surveys, including stock assessment

[^18]surveys for fisheries and protected species and ecological monitoring surveys. Disruption of these surveys could increase scientific uncertainty in survey results and may significantly affect NMFS' ability to monitor the health, status, and behavior of marine species (including protected species) and their habitat use within this region. Based on existing regional Fishery Management Councils' ABC control rule processes and risk policies (e.g., 50 CFR $\S 648.20$ and 21), increased assessment uncertainty could result in lower commercial quotas and RHLs that may reduce the likelihood of overharvesting and mitigate associated biological impacts on fish stocks. However, this would also result in lower fishing revenues and reduced recreational fishing opportunities, which could result in indirect negative impacts on fishing communities.

## Socioeconomic Impacts of Offshore Wind Energy Development

One offshore wind pilot project off Virginia installed two turbines in federal waters in 2020. Two more projects were approved in 2021. More than 20 leases have been issued for future wind energy development in federal waters from Massachusetts to North Carolina (Figure 16). The Biden adminstration has a goal of deploying 30 gigawatts of wind energy production capacity in Federal waters by 2030. Currently, the majority of that proposed development is reasonably foreseeable along the Atlantic coast. As the number of wind projects increases, so too would the level and scope of impacts to affected habitats, marine species, and human communities.
All wind lease areas shown in Figure 16 overlap with the summer flounder, scup, black sea bass, and/or bluefish stocks and fisheries (Section 6.1 and 6.2). The socioeconomic impacts of offshore wind energy on commercial fisheries could be generally negative due to the overlap of wind energy areas with productive fishing grounds. Fishing effort will be temporarily displaced during construction of wind projects. Restricted fishing access is not anticipated during the operational phase of any planned projects; however, some fishermen may choose not to operate within the project areas due to safety concerns. Any reduced fishing access (either due to restrictions or safety concerns) as a result of offshore wind energy development would result in a negative overall effect to the fishery. In some cases, effort could be displaced to another area, which could partially compensate for potential economic losses if vessel operators choose not to operate in the wind energy areas.

Turbine structures could increase the presence of and fishing for structure affiliated species, including black sea bass. Many recreational fishing trips in this region target a combination of species. For example, recreational trips which catch black sea bass often also catch tautog, scup, summer flounder, and Atlantic croaker (NEFSC 2017). For this reason, increased recreational fishing effort for species such as black sea bass near wind turbine foundations could also lead to increased recreational catches of other species. This could lead to socioeconomic benefits in terms of increased for-hire fishing revenues and angler satisfaction in certain wind project areas.

There could also be social and economic benefits in the form of jobs associated with construction and maintenance, and replacement of some electricity generated using fossil fuels with renewable sources (AWEA 2020).

It remains unclear how fishing or transiting to and from fishing grounds will be affected by the presence of a wind energy project. While no offshore wind developers have expressed an intent to exclude fishing vessels from project areas once construction is complete, it could be difficult for operators to tow bottom-tending mobile gear or transit amongst the wind turbines, depending
on the spacing and orientation of the array and weather conditions. ${ }^{26}$ If vessel operators choose to avoid fishing or transiting within wind project areas, effort displacement and additional steaming time could result in negative socioeconomic impacts to affected communities, including increased user conflicts, decreased catch and associated revenue, safety concerns, and increased fuel costs. If vessels elect to fish within wind project areas, effects could be both positive and negative due to increased catch rates for some species with some gear types (e.g., recreational catches of structure orienting species such as black sea bass) and reduced catches and associated revenues for other species and gear types (e.g., mobile bottom tending gear), user conflicts, gear damage/loss, and increased risk of allision or collision.


Figure 16. Offshore wind lease areas off New England and the Mid-Atlantic as of April 2022. Additional areas offshore of Delaware through North Carolina and in the Gulf of Maine are in the planning stages for lease sales which may occur over the next few years.

## Impacts of Oil and Gas Development on Biological and Socioeconomic Resources

Compared to offshore wind energy, fewer offshore oil and gas development activities are anticipated in this region; therefore, fewer details on the non-fishing impacts from oil and gas development are provided here.

[^19]The timeframe for potential impacts from oil and gas development activities considered in this document includes leasing and possible surveys, depending on the direction of the Bureau of Ocean Energy Management's 5 -year planning process in the North and Mid-Atlantic regions. Seismic surveys to detect and quantify mineral resources in the seabed impact marine species and the acoustic environment within which marine species live. These surveys have uncertain impacts on fish behaviors that could cumulatively lead to negative population level impacts. For protected species (sea turtle, fish, small cetacean, pinniped, large whale), the severity of these behavioral or physiological impacts is based on the species' hearing threshold, the overlap of this threshold with the frequencies emitted by the survey, as well as the duration of time the surveys would operate, as these factors influence exposure rate (Ellison et al. 2011, Ellison et al. 2018, Finneran 2015, Finneran 2016, Madsen et al. 2006, Nelms et al. 2016, Nowacek et al. 2007, Nowacek et al. 2015, NRC 2000, NRC 2003, NRC 2005, Piniak 2012, Popper et al. 2014, Richardson et al. 1995, Thomsen et al. 2006, Weilgart 2013). If marine species are affected by seismic surveys, then so in turn the fishermen targeting these species would be affected. However, such surveys could increase jobs, which may provide some positive effects on human communities (BOEM 2020). It is important to understand that seismic surveys for mineral resources are different from surveys used to characterize submarine geology for offshore wind installations, and thus these two types of activities are expected to have different impacts on marine species.

## Offshore Energy Summary

The overall impact of offshore wind energy and oil and gas exploration on the affected species and their habitats at a population level is unknown, but likely to range from moderate positive to moderate negative, depending on the species and the number and locations of projects that occur. The individual project phases (site assessment, construction, operation, and decommissioning) as well as different aspects of the technology (foundation types, cables/pipelines, turbines) will have varying impacts on resources. Mitigation efforts, such as habitat conservation measures, time of year construction restrictions, layout modifications, and fishery compensation funds could lessen the magnitude of negative impacts. The overall socioeconomic impacts are likely slight positive to moderate negative (i.e., potentially positive due to a potential increase in jobs and recreational fishing opportunities, but negative due to displacement and disruption of commercial fishing effort).

## Global Climate Change

Global climate change affects all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition; changes in ocean circulation; increased frequency, intensity, and duration of extreme climate events; changing ocean chemistry; and warming ocean temperatures. The rates of physical and chemical changes in marine ecosystems have been most rapid in recent decades (Johnson et al. 2019). Emerging evidence demonstrates that these physical changes are resulting in direct and indirect ecological responses within marine ecosystems, which may alter the fundamental production characteristics of marine systems (Stenseth et al. 2002). The general trend of changes can be explained by warming causing increased ocean stratification, which reduces primary production, lowering energy supply for higher trophic levels and changing metabolic rates. Different responses to warming can lead to altered food-web structures and ecosystem-level changes. Shifts in spatial distribution are generally to higher latitudes (i.e., poleward) and to deeper waters as species seek cooler waters
within their normal temperature preferences. Climate change will also potentially exacerbate the stresses imposed by fishing and other non-fishing human activities and stressors. Survival of marine species under a changing climate depends on their ability to adapt to change, but also how and to what degree those other human activities influence their natural adaptive capacity.
Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have impacts on Council-managed species that range from negative to positive, depending on the adaptability of each species to the changing environment (Hare et al. 2016).
Based on this assessment, summer flounder was determined to have a moderate vulnerability to climate change. The exposure of summer flounder to the effects of climate change was determined to be "very high" due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Summer flounder is an obligate estuarine-dependent species. Spawning occurs on the shelf and juveniles inhabit estuaries. Adults make seasonal north-south migrations exposing them to changing conditions inshore and offshore. The distributional vulnerability of summer flounder was ranked as "high," given that summer flounder spawn in shelf waters and eggs and larvae are broadly dispersed. Adults use a range of habitats including estuarine, coastal, and shelf. The life history of the species has a strong potential to enable shifts in distribution. Summer flounder were thus determined to have low biological sensitivity to climate change (Hare et al. 2016).
This assessment determined that scup have a moderate vulnerability to climate change. The exposure of scup to the effects of climate change was determined to be "very high" due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Scup have seasonal inshore/offshore and north/south migrations. As warming continues, the availability of winter (offshore/southern) and summer (inshore/northern) habitat may increase and therefore may result in positive impacts on scup distribution, abundance and recruitment. Scup were determined to have low biological sensitivity to climate change, given their life history, spawning behavior, and relatively long life span (Hare et al. 2016).
Black sea bass had a high overall vulnerability to climate change. The exposure of black sea bass to the effects of climate change was determined to be "very high" due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Black sea bass occur in coastal areas during warm months and migrate offshore in cold months and thus are exposed to changes occurring both in offshore and inshore waters. The distributional vulnerability for black sea bass was also rated as "high." The biological sensitivity of black sea bass to climate change was ranked as "moderate" (Hare et al. 2016).

Bluefish was determined to have a moderate vulnerability to climate change. The exposure of bluefish to the effects of climate change was determined to be "high" due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Bluefish is an obligate estuarine-dependent species. Spawning occurs on the shelf and juveniles inhabit estuaries. Adults make seasonal north-south migrations exposing them to changing conditions inshore and offshore. The distributional vulnerability of bluefish was ranked as "high," given that bluefish spawn in shelf waters and eggs and larvae are broadly dispersed. Adults use a range of habitats including estuarine, coastal, and shelf. The life history
of the species has a strong potential to enable shifts in distribution. Bluefish were thus determined to have low biological sensitivity to climate change (Hare et al. 2016) ${ }^{27}$

Overall vulnerability results for additional Greater Atlantic species, including several non-target species identified in this action, are shown in Figure 17 (Hare et al. 2016). While the effects of climate change may benefit some habitats and the populations of species through increased availability of food and nutrients, reduced energetic costs, or decreased competition and predation, a shift in environmental conditions outside the normal range can result in negative impacts for those habitats and species unable to adapt. This, in turn, may lead to higher mortality, reduced growth, smaller size, and reduced reproduction or populations. Thus, already stressed populations are expected to be less resilient and more vulnerable to climate impacts. Climate change is expected to have impacts that range from positive to negative depending on the species. However, future mitigation and adaptation strategies to climate change may mitigate some of these impacts. The science of predicting, evaluating, monitoring and categorizing these changes continues to evolve. The social and economic impacts of climate change will depend on stakeholder and community dependence on fisheries, and their capacity to adapt to change. Commercial and recreational fisheries may adapt in different ways, and methods of adaptation will differ among regions. In addition to added scientific uncertainty, climate change will introduce implementation uncertainty and other challenges to effective conservation and management.

[^20]

Figure 17. Overall climate vulnerability scores for Greater Atlantic Region species, with summer flounder, scup, black sea bass, and bluefish highlighted with a black boxes. Overall climate vulnerability is denoted by color: low (green), moderate (yellow), high (orange), and very high (red). Certainty in score is denoted by text font and text color: very high certainty ( $>95 \%$, black, bold font), high certainty ( $90-95 \%$, black, italic font), moderate certainty ( $66-$ $90 \%$, white or gray, bold font), low certainty ( $<66 \%$, white or gray, italic font). Figure source: Hare et al. 2016.

### 7.6.3 Summary of Effects of the Proposed Actions

As described in more detail in Section 5, the preferred alternatives would modify the process for setting recreational bag size, and season limits such that measures would aim to achieve a percent change in harvest compared to expected harvest under status quo measures. The appropriate percent change would be informed by a comparison of harvest under status quo measures to the upcoming two-year average RHL, as well as a comparison of biomass to the target level (Section 5.1.2). The preferred alternatives would also modify one minor aspect of the recreational AMs such that, in some circumstances, consideration would be given to whether recreational ACL overages contributed to overfishing, as described in Section 5.4.2.

The impacts of the proposed actions are described in Sections 7.1 through 7.5 and are summarized in Section 1.3 of this EA.

### 7.6.4 Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative impacts of the preferred alternatives, the incremental impacts of the direct and indirect impacts should be considered, on a VEC-by-VEC basis, in addition to the effects of all actions (those identified and discussed
relative to the past, present, and reasonably foreseeable future actions of both fishing and nonfishing actions). Sections 7.1 through 7.5 provide a summary of likely impacts of the management alternatives contained in this action. The CEA baseline represents the sum of past, present, and reasonably foreseeable future actions and conditions of each VEC. When an alternative has a positive impact on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with other actions that were also designed to increase stock size. In contrast, when an alternative has negative effects on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the other actions. The resultant positive and negative cumulative effects are described below for each VEC. As previously described, nonfishing impacts on the VECs generally range from no impact to slight negative.

### 7.6.4.1 Magnitude and Significance of Cumulative Effects on Human Communities

Past fishery management actions taken through the respective FMPs and annual specifications process have had both positive and negative cumulative effects on human communities. They have benefitted domestic fisheries through sustainable fishery management, but have also reduced participation in fisheries and imposed management measures such as catch limits and gear restrictions which have limited potential revenues and impacted efficiency and costs.

It is anticipated that future fishery management actions will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on some human communities could occur if management actions result in reduced revenues. Overall, the past, present, and reasonably foreseeable future actions have had overall positive cumulative effects for human communities. Despite the potential for negative short-term effects due to reduced revenues, positive long-term effects are expected due to the long-term sustainability of the managed stocks.

By providing revenues and contributing to the overall functioning of and employment in coastal communities, the summer flounder, scup, black sea bass, and bluefish fisheries have both direct and indirect positive social impacts. As previously described, the preferred alternatives are unlikely to result in substantial changes to levels of fishing effort or the character of that effort relative to current conditions.

When the direct and indirect effects of the preferred alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), the cumulative effects are expected to yield non-significant slight positive impacts.

### 7.6.4.2 Magnitude and Significance of Cumulative Effects on Target and Non-Target Species

As described in Section 6.3, summer flounder, scup, black sea bass, bluefish, and all primary non-target species except sea robins, king whiting, and pinfish are managed by a Regional Fishery Management council, NMFS, and/or the Commission. Past fishery management actions taken through the respective FMPs and the annual specifications process ensure that stocks are managed sustainably and that measures are consistent with the objectives of the FMP under the guidance of the MSA. These actions have generally had a positive cumulative effect on these species. It is anticipated that future management actions will have additional indirect positive effects on the target species through actions which reduce and monitor bycatch, protect habitat, and protect the ecosystem services on which the productivity of these species depend.

As noted previously, none of the preferred alternatives are expected to result in any notable changes in fishing effort relative to current conditions. Therefore, impacts of the fisheries on summer flounder, scup, black sea bass, bluefish, and non-target species are not expected to change relative to current conditions under the preferred alternatives. The preferred alternatives would positively reinforce the past and anticipated positive cumulative effects on target and nontarget species by achieving the objectives specified in the FMPs.

When the direct and indirect effects of the preferred alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), the cumulative effects are expected to yield non-significant positive impacts on summer flounder, scup, black sea bass, bluefish, and non-target species.

### 7.6.4.3 Magnitude and Significance of Cumulative Effects on Habitat

Past fishery management actions and annual specifications process have had positive cumulative effects on habitat. The actions have constrained fishing effort at both local and larger scales and have implemented gear requirements which reduce impacts on habitat. EFH and Habitat Areas of Particular Concern were designated for the managed species. It is anticipated that future management actions will result in additional direct or indirect positive effects on habitat through actions which protect EFH and protect ecosystem services on which these species' productivity depends.

As previously described, many additional non-fishing activities are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat. These impacts could be broad in scope. All the VECs are interrelated; therefore, the linkages among habitat quality, target and non-target species productivity, and associated fishery yields should be considered. Some actions, such as coastal population growth and climate change may indirectly impact habitat and ecosystem productivity; however, these actions are beyond the scope of NMFS and Council management. Reductions in overall fishing effort and protection of sensitive habitats have mitigated some negative effects.

As previously noted, none of the preferred alternatives are expected to result in significantly increased levels of fishing effort or changes to the character of that effort relative to current conditions. Although the impacted areas have been fished for many years with many different gear types and therefore will not likely be further impacted by these measures, continued fishing effort will continue to impact habitats. Therefore, the slight negative impacts of the fishery on the physical environment are not expected to change relative to the current condition under the preferred alternatives.
When the direct and indirect effects of the preferred alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), the cumulative effects are expected to yield non-significant slight negative impacts on the physical environment and EFH.

### 7.6.4.4 Magnitude and Significance of Cumulative Effects on Protected Species

Taking into consideration the above information and information provided in section 6.5, past fishery management actions taken through the respective FMPs and annual specifications process have had slight indirect positive cumulative effects on protected species. The actions have constrained fishing effort both at a large scale and locally, and have implemented, pursuant
to the ESA, MMPA, or MSA, gear modifications, requirements, and management areas. These measures and/or actions have served to reduce interactions between protected species and fishing gear. It is anticipated that future management actions will result in additional indirect positive effects on protected species. These impacts could be broad in scope.

As described in Section 7.5, none of the preferred alternatives are expected to impact protected species as they would only define the process for setting measures (i.e., recreational bag, size, and season limits) and would modify one component of the recreational AMs. In regards to their impacts on protected species, they are administrative in nature because the process for setting measures and the metric used under the relevant component of the AMs will not impact recreational fishing effort or the distribution of that effort. Specific measures implemented following the process defined under the preferred alternatives, including their expected impacts on protected species, will be analyzed and implemented through separate future specifications packages.
When the effects of the preferred alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), the cumulative effects are expected to yield non-significant slight negative impacts to slight positive impacts.

### 7.6.5 Proposed Action on all VECs

As described in more detail in Section 5, the preferred alternatives would modify the process for setting recreational bag size, and season limits such that measures would aim to achieve a percent change in harvest compared to expected harvest under status quo measures. The appropriate percent change would be informed by a comparison of harvest under status quo measures to the upcoming two-year average RHL, as well as a comparison of biomass to the target level (Section 5.1.2). The preferred alternatives would also modify one minor aspect of the recreational AMs such that, in some circumstances, consideration would be given to whether recreational ACL overages contributed to overfishing, as described in Section 5.4.2.

The direct and indirect impacts of the proposed action on the VECs are described in Sections 7.1 through 7.5 and are summarized in the Executive Summary (Section 1.3) and in Table 36 below. The magnitude and significance of the cumulative effects, including additive and synergistic effects of the proposed action, as well as past, present, and future actions, have been taken into account (Section 7.6.4). In summary, the information in these sections indicates that when considered in conjunction with all other relevant past, present, and reasonably foreseeable future actions, the preferred alternatives are not expected to result in any significant impacts, positive or negative.

The preferred alternatives are consistent with other management measures that have been implemented in the past for these fisheries. These measures are part of a broader management scheme for summer flounder, scup, black sea bass, and bluefish which has helped to ensure longterm sustainability, while minimizing environmental impacts.

The regulatory atmosphere within which federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of managed species, habitat, and human communities. Consistent with NEPA, the MSA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on
all VECs from past, present and reasonably foreseeable future actions have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the VECs are not experiencing negative impacts, but rather that when considered as a whole and as a result of the management measure implemented in these fisheries, the overall long-term trend is positive.

There are no significant cumulative effects associated with the preferred alternatives based on the information and analyses presented in this document and in past FMP documents.
Cumulatively, through 2028, it is anticipated that the cumulative effects will range from positive to slight negative, depending on the VEC (Table 36).
Table 36. Summary of cumulative effects of preferred alternatives.

| Impacts | Socioeconomic <br> impacts | Target <br> species | Non-target <br> species | Habitat | Protected <br> species |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Impacts of <br> preferred <br> alternatives | Moderate <br> positive and <br> moderate <br> negative <br> (Section 7.1) | Slight <br> negative to <br> moderate <br> positive <br> (Section 7.2) | No impacts <br> (Section 7.3) | No impacts <br> (Section 7.4) | No impacts <br> (Section 7.5) |
| Combined <br> cumulative <br> effects <br> assessment <br> baseline <br> conditions | Positive | Positive | Positive | Slight <br> positive | Slight <br> negative to <br> slight positive |
| Cumulative <br> effects <br> (all non- <br> significant) | Slight positive <br> (Section | Positive <br> (Section | Positive <br> (Section | Slight <br> negative <br> (Section | Slight <br> negative to <br> slight positive <br> (Section <br> $7.6 .4)$ |
| 7.6.4.2) | 7.6.4.2) | 7.6.4.3) |  |  |  |

## 8 Other Applicable Laws

### 8.1 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

### 8.1.1 National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with ten National Standards. The Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing while achieving, on a continuing basis, optimum yield for summer flounder, scup, black sea bass, and bluefish and the U.S. fishing industry. To achieve optimum yield, both scientific and management uncertainty are addressed when establishing catch limits. The Council develops recommendations that do not exceed the ABC recommendations of the Scientific and Statistical Committee, which explicitly address scientific uncertainty. The Council considers management uncertainty and other social, economic, and ecological factors, when recommending Annual Catch Targets. The Council uses the best scientific information available (National Standard 2) and manages these species throughout
their range (National Standard 3). These management measures do not discriminate among residents of different states (National Standard 4) and they do not have economic allocation as their sole purpose (National Standard 5). The measures account for variations in the fisheries (National Standard 6) and avoid unnecessary duplication (National Standard 7). They take into account the fishing communities (National Standard 8) and they promote safety at sea (National Standard 10). The proposed actions are consistent with National Standard 9, which addresses bycatch in fisheries. The Council has implemented many regulations that have indirectly reduced fishing gear impacts on EFH (Section 6.4.3). By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, the Council will ensure that cumulative impacts of these actions will remain positive overall for the managed species, the ports and communities that depend on these fisheries, and the Nation as a whole.

### 8.1.2 Essential Fish Habitat Assessment

EFH assessments are required for any action that is expected to have an adverse impact on EFH, even if the impact is only minimal and/or temporary in nature (50 CFR Part 600.920 (e) (1-5)).

## Description of Action

As described in more detail in Section 5, the preferred alternatives would modify the process for setting recreational bag size, and season limits such that measures would aim to achieve a percent change in harvest compared to expected harvest under status quo measures. The appropriate percent change would be informed by a comparison of harvest under status quo measures to the upcoming two-year average RHL, as well as a comparison of biomass to the target level (Section 5.1.2). The preferred alternatives would also modify one minor aspect of the recreational AMs such that, in some circumstances, consideration would be given to whether recreational ACL overages contributed to overfishing, as described in Section 5.4.2.

## Potential Adverse Effects of the Action on EFH

The types of habitat impacts caused by hook and line gear (the primary gear type used in the recreational summer flounder, scup, black sea bass, and bluefish fisheries) are summarized in Section 6.4.3.

As described in Section 7.4, none of the preferred alternatives are expected to have direct impacts on habitat as they would only define the process for setting measures and would modify one component of the AMs; therefore, in regards to their impacts on habitat, they are administrative in nature.

## Proposed Measures to Avoid, Minimize, or Mitigate Adverse Impacts of This Action

Amendment 13 considered measures in the Summer Flounder, Scup, and Black Sea Bass FMP which impact EFH (MAFMC 2002). The analysis in Amendment 13 indicated that no management measures were needed to minimize impacts to EFH because the trawl fisheries for summer flounder, scup, and black sea bass in federal waters are conducted primarily in high energy mobile sand habitat where gear impacts are minimal and/or temporary in nature. Hook and line are the principal gears used in the recreational fishery for all three species. These gears have minimal adverse impacts on EFH in the region (Stevenson et al. 2004). These characteristics of the fisheries have not changed since Amendment 13. None of the alternatives included in this document were designed to avoid, minimize, or mitigate adverse impacts on EFH.

Section 6.4.3 lists examples of management measures previously implemented by the Council with the intent of minimizing the impacts of various fisheries on habitat. None of these measures substantially restrict the summer flounder, scup, or black sea bass fisheries.

## Conclusions

Overall, the preferred alternatives are expected to no impacts on EFH; therefore, an EFH consultation is not required.

### 8.2 Endangered Species Act

Section 7 of the ESA requires federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species and do not adversely affect designated critical habitat of listed species.
Pursuant to Section 7 of the ESA, NMFS issued a Biological Opinion (Opinion) on May 27, 2021, that considered the effects of the NMFS' authorization of ten FMPs, NMFS' North Atlantic Right Whale Conservation Framework, and the New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment 2, on ESA-listed species and designated critical habitat (NMFS 2021). The ten FMPs considered in the Opinion include the: (1) American lobster; (2) Atlantic bluefish; (3) Atlantic deep-sea red crab; (4) mackerel/squid/butterfish; (5) monkfish; (6) Northeast multispecies; (7) Northeast skate complex; (8) spiny dogfish; (9) summer flounder/scup/black sea bass; and (10) Jonah crab FMPs. The American lobster and Jonah crab FMPs are permitted and operated through implementing regulations compatible with the interstate fishery management plans issued under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, the other eight FMPs are issued under the authority of the MSA.

The 2021 Opinion determined that the NMFS' authorization of ten FMPs, NMFS' North Atlantic Right Whale Conservation Framework, and the New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment 2 may adversely affect, but is not likely to jeopardize, the continued existence of North Atlantic right, fin, sei, or sperm whales; the Northwest Atlantic Ocean DPS of loggerhead, leatherback, Kemp's ridley, or North Atlantic DPS of green sea turtles; any of the five DPSs of Atlantic sturgeon; Gulf of Maine DPS Atlantic salmon; or giant manta rays. The Opinion also concluded that the proposed action is not likely to adversely affect designated critical habitat for North Atlantic right whales, the Northwest Atlantic Ocean DPS of loggerhead sea turtles, U.S. DPS of smalltooth sawfish, Johnson's seagrass, or elkhorn and staghorn corals. An Incidental Take Statement was issued in the Opinion. The Incidental Take Statement includes reasonable and prudent measures and their implementing terms and conditions, which NMFS determined are necessary or appropriate to minimize impacts of the incidental take in the fisheries assessed in this Opinion (NMFS 2021).
Given the information provided above, it has been determined that the proposed action is within the scope of the Summer Flounder/Scup/Black Sea Bass FMP and the Bluefish FMP considered in the 2021 Opinion and will not create impacts to ESA-listed species or critical habitat that go above and beyond those considered in the 2021 Opinion completed by NMFS.

### 8.3 Marine Mammal Protection Act

Section 6.5 describes the marine mammal species which inhabit the affected environment of this action. As described in Section 6.5.3, some marine mammal species have the potential to interact with hook and line gear (the predominant gear types used in the recreational summer flounder, scup, black sea bass, and bluefish fisheries). The impacts of the proposed measures on marine mammals (Section 7.5) are consistent with the provisions of the MMPA. The preferred alternatives would not alter existing measures to protect marine mammals.

A final determination of consistency with the MMPA will be made by NMFS during rulemaking for this action.

### 8.4 Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, provides measures for ensuring productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. The Council will submit this document to NMFS. NMFS will determine whether the proposed actions are consistent to the maximum extent practicable with the coastal zone management programs for each state (Maine through North Carolina).

### 8.5 Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in development of an FMP and subsequent amendments and framework adjustments. There were many opportunities for public review, input, and access to the rulemaking process during the development of the proposed management measures described in this document, and during development of this document. This action was developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on development of the preferred alternatives during the following meetings (starting with the Council and Policy Board meeting which initiated this action):

- Council and Policy Board meetings:
- October 7, 2020 meeting via webinar.
- December 16, 2020 meeting via webinar.
- February 1, 2021 meeting via webinar.
- June 8, 2021 meeting via webinar.
- August 10, 2021 meeting via webinar.
- October 21, 2021 meeting via webinar.
- February 1, 2022 meeting via webinar.
- May 5, 2022 meeting via webinar and in Arlington, VA.
- June 7, 2022 hybrid meeting via webinar and in Riverhead, NY.
- FMAT/PDT meetings, all via webinar:
- June 7, 2021
- June 21, 2021
- July 6, 2021
- July 16, 2021
- August 23, 2021
- September 8, 2021
- September 16, 2021
- September 23, 2021
- November 30, 2021
- January 13, 2022
- January 21, 2022
- Advisory Panel meeting on May 25, 2022 via webinar.
- Full SSC meetings or SSC subgroup meetings:
- September 20, 2021 via webinar.
- March 16, 2022 via webinar.
- March 25, 2022 via webinar.
- April 13, 2022 via webinar.
- April 29, 2022 via webinar.
- May 10, 2022 via webinar.
- July 26, 2022 hybrid meeting via webinar and in Baltimore, MD.
- Commission public hearings via webinar:
- March 16, 2022
- March 21, 2022
- March 24, 2022
- March 28, 2022
- March 31, 2022
- April 5, 2022
- April 11, 2022
- April 13, 2022

The public will have further opportunity to comment on this document and the proposed management measures once NMFS publishes a request for comments notice in the Federal Register.

### 8.6 Data Quality Act

## Utility of Information Product

This document includes a description of the alternatives considered, the preferred actions and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation of the changes proposed through this document serves as a supporting document for the proposed rule.

The preferred alternatives were developed consistent with the FMP, MSA, and other applicable laws. They were developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during a number of public meetings (Section 8.5). The public will have further opportunity to comment on this action once NMFS publishes a request for comments notice in the Federal Register.

## Integrity of Information Product

This information product meets the standards for integrity under the following types of documents: Other/Discussion (e.g., Confidentiality of Statistics of the MSA; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act).

## Objectivity of Information Product

The category of information product that applies here is "Natural Resource Plans." Section 8 describes how this document was developed to be consistent with any applicable laws, including the MSA. The analyses used to develop the alternatives (i.e., policy choices) are based upon the best scientific information available. The most up to date information was used to develop this EA which evaluates the impacts of those alternatives (Section 7). The specialists who worked with these core data sets and population assessment models are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the black sea bass fisheries.

The review process for this document involves Council, NEFSC, GARFO, and NMFS headquarters. The NEFSC technical review is conducted by senior level scientists with specialties in fisheries ecology, population dynamics, biology, economics, and social anthropology. The Council review process involves public meetings at which affected stakeholders can comment on proposed management measures. Review by GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected resources, and applicable laws. Final approval of this document and clearance of the rule is conducted by staff at NMFS Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

### 8.7 Executive Order 13132 (Federalism)

Executive Order 13132 established nine fundamental federalism principles for federal agencies to follow when developing and implementing actions with federalism implications. It also lists a series of policy making criteria to which federal agencies must adhere when formulating and implementing policies that have federalism implications. This document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 13132. The affected states have been closely involved in the development of the proposed fishery specifications through their representation on the Council and/or the Commission.

### 8.8 Paperwork Reduction Act

The Paperwork Reduction Act concerns the collection of information. The intent of the Paperwork Reduction Act is to minimize the federal paperwork burden for individuals, small businesses, state and local governments, and other persons, as well as to maximize the usefulness of information collected by the federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

### 8.9 Executive Order 12898 (Environmental Justice)

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) provides guidelines to ensure that potential impacts
on these populations are identified and mitigated, and that these populations can participate effectively in the NEPA process. NOAA guidance NAO 216-6A, Companion Manual, Section 10(A) requires the consideration of EO 12898 in NEPA documents. Agencies should also encourage public participation, especially by affected communities, during scoping, as part of a broader strategy to address environmental justice issues. Minority and low-income individuals or populations must not be excluded from participation in, denied the benefits of, or subjected to discrimination because of their race, color, or national origin.

Although the impacts of this action may affect communities with environmental justice concerns, the proposed actions should not have disproportionately high effects on low income or minority populations. The proposed actions would apply to all participants in the affected area, regardless of minority status or income level. There is insufficient demographic data on participants in the recreational summer flounder, scup, black sea bass, and bluefish fisheries (e.g., for-hire captains and crew, for-hire customers, private recreational anglers, employees of support industries) to quantify the income and minority status of potentially affected fishery participants. Without more data, it is difficult to fully determine how this action may impact various population segments. The public comment process is an opportunity to identify issues that may be related to environmental justice. The public has never requested translations of documents pertinent to the summer flounder, scup, black sea bass, and bluefish fisheries.
The NOAA Fisheries Community Social Vulnerability Indices ${ }^{28}$ can help identify communities where environmental justice may be of concern. Vulnerability indices include labor force structure, housing characteristics, poverty, population composition, and personal disruption. Gentrification pressure is also measured through indices for housing disruption, urban sprawl, and retiree migration. All indices include categorical rankings from 1 through 4, with 1 representing the lowest vulnerability and 4 representing the highest vulnerability. This same data set includes rankings of recreational fishery engagement and recreational fishery reliance. Table 37 lists the vulnerability categorical rankings for communities with medium high or high recreational fishery engagement or reliance in states where at least $5 \%$ of recreational harvest of summer flounder, scup, black sea bass, or bluefish occurred in recent years (Section 6.1). Recreational fishing engagement and reliance at the community level is not broken down by species. Therefore, it is possible that the recreational fishery engagement and reliance rankings for some of these communities may be driven by fisheries other than summer flounder, scup, black sea bass, and bluefish.

Federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and (or) wildlife for subsistence. GARFO tracks these issues, but there are no federally recognized tribal agreements for subsistence fishing in federal waters in the regions impacted by this action.

[^21]Table 37. Community social vulnerability indicator categorical scores for communities in states with at least $5 \%$ of recreational harvest of summer flounder, scup, black sea bass, or bluefish in recent years and high or medium high recreational fishing engagement or reliance (which may be driven by other species). 1 refers to a low vulnerability ranking, 2 indicates medium, 3 indicates medium high, and 4 indicates high. Only those communities with a ranking of medium high or high in at least one category are shown.
Indicator scores are based on 2019, the most recent year available. Details on the methodology and definitions of each category can be found at https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/

| State | Community Name | Poverty | Labor Force | Housing Characteristics | Population Composition | Personal Disruption | Housing Disruption | Retiree Migration | Urban Sprawl |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MA | Barnstable Town | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 |
| MA | Bourne | 1 | 3 | 2 | 1 | 1 | 3 | 4 | 1 |
| MA | Dennis | 1 | 4 | 1 | 1 | 1 | 3 | 4 | 1 |
| MA | Falmouth | 1 | 4 | 2 | 1 | 1 | 4 | 4 | 2 |
| MA | Harwich Port | 1 | 4 | 1 | 1 | 1 | 3 | 4 | 1 |
| MA | Mattapoisett | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 |
| MA | Newburyport | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |
| MA | Oak Bluffs | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 |
| MA | Plymouth | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 |
| MA | Salem | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 3 |
| MA | Yarmouth/South Yarmouth/West Yarmouth/Yarmouth Port | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 1 |
| RI | Jamestown | 1 | 2 | 1 | 1 | 1 | 4 | 2 | 2 |
| RI | Narragansett/Point Judith | 1 | 2 | 1 | 1 | 1 | 3 | 2 | 1 |
| RI | Newport | 2 | 1 | 1 | 1 | 1 | 4 | 1 | 2 |
| CT | New Haven | 4 | 1 | 2 | 4 | 4 | 2 | 1 | 3 |
| CT | New London | 4 | 1 | 3 | 3 | 4 | 1 | 1 | 1 |
| NY | Babylon | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 4 |
| NY | Bronx/City Island | 4 | 1 | 2 | 4 | 4 | 2 | 1 | 4 |
| NY | Brooklyn/Sheepshead Bay | 4 | 1 | 1 | 4 | 3 | 4 | 1 | 4 |
| NY | Center Moriches | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 |
| NY | Freeport | 1 | 1 | 1 | 4 | 1 | 2 | 1 | 4 |
| NY | Hampton Bays/Shinnecock | 1 | 1 | 1 | 3 | 1 | 4 | 1 | 2 |
| NY | Lindenhurst | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 4 |
| NY | Long Beach | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 4 |
| NY | Montauk | 1 | 3 | 1 | 1 | 1 | 4 | 4 | 3 |
| NY | Mount Sinai | 1 | 1 |  | 1 | 1 | 1 | 2 | 3 |
| NY | Northport | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 |
| NY | Orient | 1 | 4 | 1 | 1 | 1 | 4 | 4 | 2 |


| State | Community Name | Poverty | Labor <br> Force | Housing Characteristics | Population Composition | Personal Disruption | Housing Disruption | Retiree Migration | Urban Sprawl |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NY | Point Lookout | 1 | 3 | 1 | 1 | 1 | 1 | 4 | 4 |
| NY | Port Jefferson | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |
| NY | Queens | 2 | 1 | 1 | 4 | 2 | 4 | 1 | 4 |
| NY | Saint James | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 |
| NY | Seaford | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 |
| NY | Verplanck | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| NY | Wantagh | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 4 |
| NJ | Avalon | 1 | 4 | 1 | 1 | 1 | 4 | 4 | 2 |
| NJ | Avon-by-the-Sea | 1 | 3 | 1 | 1 | 1 | 1 | 3 | 3 |
| NJ | Barnegat Light | 1 | 4 |  | 1 | 1 | 4 | 4 | 2 |
| NJ | Belmar/South Belmar | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 3 |
| NJ | Berkeley/Bayville | 1 | 4 | 2 | 1 | 1 | 1 | 4 |  |
| NJ | Brigantine | 1 | 2 | 1 | 1 | 1 | 4 | 3 | 1 |
| NJ | Cape May | 1 | 3 | 2 | 1 | 1 | 4 | 3 | 1 |
| NJ | Ocean City | 1 | 3 | 1 | 1 | 1 | 4 | 4 | 1 |
| NJ | Point Pleasant Beach | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 3 |
| NJ | Sea Isle City | 1 | 4 | 1 | 1 | 1 | 4 | 4 | 1 |
| NJ | Seaside Park | 1 | 3 | 1 | 1 | 1 | 4 | 3 | 3 |
| NJ | Upper/Beeley's Point/Seaville/Strathmere | 1 | 1 | 2 | 1 | 1 | 1 | 1 |  |
| NJ | Wildwood | 3 | 3 | 2 | 1 | 3 | 4 | 2 | 1 |
| DE | Lewes | 1 | 4 | 1 | 1 | 1 | 3 | 4 | 1 |
| DE | Millsboro | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 1 |
| DE | Rehoboth Beach-Dewey Beach-Indian River | 1 | 3 | 1 | 1 | 1 | 4 | 4 | 1 |
| VA | Gloucester Courthouse | 1 | 4 | 2 | 1 | 1 | 1 | 4 | 1 |
| VA | Newport News | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 1 |
| VA | Norfolk | 3 | 1 | 2 | 2 | 3 | 2 | 1 | 1 |
| NC | Atlantic Beach | 1 | 3 | 3 | 1 | 1 | 3 | 3 | 1 |
| NC | Avon | 1 | 4 |  | 1 | 4 |  | 3 | 1 |
| NC | Bath | 1 | 4 | 2 | 1 | 1 | 4 | 4 | 1 |
| NC | Beaufort | 3 | 3 | 3 | 1 | 2 | 1 | 3 | 1 |
| NC | Belhaven | 3 | 3 | 4 | 2 | 4 | 1 | 3 | 1 |
| NC | Carolina Beach | 1 | 1 | 2 | 1 | 1 | 4 | 1 | 1 |
| NC | Emerald Isle | 1 | 3 | 2 | 1 | 1 | 2 | 3 | 1 |
| NC | Hatteras/Avon/Buxton/Frisco/ Rodanthe/Salvo/Waves | 3 | 1 | 3 | 1 | 2 | 1 | 2 | 1 |


| State | Community Name | Poverty | Labor <br> Force | Housing Characteristics | Population Composition | Personal Disruption | Housing Disruption | Retiree Migration | Urban Sprawl |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NC | Jacksonville | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 |
| NC | Kill Devil Hills | 1 | 1 | 3 | 1 | 2 | 3 | 1 | 1 |
| NC | Kure Beach | 1 | 3 | 1 | 1 | 1 | 3 | 3 | 1 |
| NC | Manteo | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 1 |
| NC | Morehead City | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 1 |
| NC | Nags Head | 1 | 1 | 2 | 1 | 1 | 3 | 2 | 1 |
| NC | North Topsail Beach | 3 | 3 | 2 | 1 | 1 | 4 | 3 | 1 |
| NC | Oak Island | 1 | 3 | 3 | 1 | 1 | 3 | 4 | 1 |
| NC | Ocean Isle Beach | 1 | 4 | 1 | 1 | 1 | 1 | 4 | 1 |
| NC | Wanchese | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 |
| FL | Boynton Beach | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 2 |
| FL | Cape Canaveral | 1 | 3 | 3 | 1 | 1 | 4 | 3 | 1 |
| FL | Coral Gables | 1 | 1 | 1 | 3 | 1 | 3 | 1 | 3 |
| FL | Dania Beach | 3 | 1 | 3 | 3 | 2 |  | 1 | 2 |
| FL | Daytona Beach | 4 | 2 | 3 | 2 | 3 | 1 | 2 | 1 |
| FL | Deerfield Beach | 2 | 1 | 3 | 4 | 2 | 1 | 1 | 2 |
| FL | Duck Key | 1 | 4 | 2 | 1 | 1 | 4 | 4 | 1 |
| FL | Edgewater | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |
| FL | Fernandina Beach | 1 | 4 | 2 | 1 | 1 | 2 | 4 | 1 |
| FL | Flagler Beach | 2 | 4 | 2 | 1 | 1 | 3 | 4 | 1 |
| FL | Homestead | 4 | 1 | 2 | 4 | 4 | 3 | 1 | 2 |
| FL | Islamorada (Village of Islands) | 1 | 2 | 1 | 1 | 1 | 4 | 2 | 1 |
| FL | Jacksonville | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 |
| FL | Jacksonville Beach | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 |
| FL | Jensen Beach | 1 | 3 | 3 | 1 | 1 | 2 | 3 | 1 |
| FL | Juno Beach | 1 | 4 | 1 | 1 | 1 | 2 | 4 | 1 |
| FL | Jupiter | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| FL | Key Biscayne | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 4 |
| FL | Key Largo | 3 | 2 | 2 | 1 | 1 | 4 | 2 | 1 |
| FL | Key West | 2 | 1 | 1 | 2 | 1 | 4 | 1 | 1 |
| FL | Lauderdale-by-the-Sea | 1 | 4 | 1 | 1 | 1 | 1 | 4 | 3 |
| FL | Layton | 1 | 2 | 1 | 2 | 1 | 4 | 3 | 1 |
| FL | Marathon | 2 | 1 | 3 | 2 | 1 | 3 | 1 | 1 |
| FL | Melbourne Beach | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 1 |
| FL | Miami | 4 | 1 | 3 | 4 | 3 | 4 | 1 | 4 |
| FL | New Smyrna Beach | 1 | 4 | 2 | 1 | 1 | 3 | 4 | 1 |
| FL | North Key Largo | 1 | 4 | 1 | 1 | 1 | 1 | 4 | 4 |


| State | Community Name | Poverty | Labor <br> Force | Housing Characteristics | Population Composition | Personal Disruption | Housing Disruption | Retiree Migration | Urban Sprawl |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| FL | North Miami Beach | 4 | 1 | 3 | 4 | 3 | 2 | 1 | 2 |
| FL | Oak Hill | 1 | 4 | 4 | 1 | 1 | 3 | 4 | 1 |
| FL | Ormond Beach | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 1 |
| FL | Palm Coast | 1 | 3 | 2 | 1 | 1 | 1 | 4 | 1 |
| FL | Pompano Beach | 3 | 2 | 3 | 4 | 3 | 1 | 1 | 2 |
| FL | Ponce Inlet | 1 | 4 | 1 | 1 | 1 | 4 | 4 | 1 |
| FL | Port Orange | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 1 |
| FL | Riviera Beach | 3 | 1 | 3 | 4 | 3 | 3 | 1 | 1 |
| FL | Sebastian | 1 | 4 | 3 | 1 | 1 | 1 | 4 | 1 |
| FL | St. Augustine | 2 | 3 | 2 | 1 | 1 | 3 | 2 | 1 |
| FL | Stuart | 2 | 3 | 3 | 2 | 1 | 2 | 3 | 1 |
| FL | Titusville | 2 | 3 | 3 | 1 | 2 | 1 | 2 | 1 |
| FL | Vero Beach | 1 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |
| FL | Wabasso | 1 | 3 |  | 1 | 1 |  | 2 | 1 |

### 8.10 Regulatory Flexibility Act

### 8.10.1 Basis and Purpose of the Rule and Summary of Preferred Alternatives

This action is taken under the authority of the MSA and regulations at 50 CFR part 648 . Section 4.1 includes the NEPA purpose and need for this action.

As described in more detail in Section 5, the preferred alternatives would modify the process for setting recreational bag size, and season limits such that measures would aim to achieve a percent change in harvest compared to status quo measures. The appropriate percent change would be informed by a comparison of harvest under status quo measures to the upcoming twoyear average RHL, as well as a comparison of biomass to the target level (Section 5.1.2). The preferred alternatives would also modify one minor aspect of the recreational AMs such that, in some circumstances, consideration would be given to whether recreational ACL overages contributed to overfishing, as described in Section 5.4.2.

The Regulatory Flexibility Act, enacted in 1980 and codified at 5 U.S.C. 600-611, was designed to place the burden on the government to review all new regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The Regulatory Flexibility Act recognizes that the size of a business, unit of government, or nonprofit organization can have a bearing on its ability to comply with federal regulations. Major goals of the Act are to: 1) increase agency awareness and understanding of the impact of their regulations on small business; 2) require that agencies communicate and explain their findings to the public; and 3) encourage agencies to use flexibility and to provide regulatory relief to small entities.

The Regulatory Flexibility Act emphasizes predicting significant adverse impacts on small entities as a group distinct from other entities, as well as consideration of alternatives that may minimize negative impacts to small entities, while still achieving the objective of the action (Section 4.1). When an agency publishes a proposed rule, it must either, (1) certify that the action will not have a significant adverse impact on a substantial number of small entities, and support such a certification with a factual basis demonstrating this outcome, or (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis that describes the impact of the proposed rule on small entities.
The sections below provide supporting analysis to assess whether the proposed regulations will have a "significant impact on a substantial number of small entities."

### 8.10.2 Description and Number of Regulated Entities to which the Rule Applies

The entities (i.e., the small and large businesses) that may be affected by this action include fishing operations with federal party/charter permits for summer flounder, scup, black sea bass, and/or bluefish. Private recreational anglers are not considered "entities" under the Regulatory Flexibility Act, thus economic impacts on private anglers are not considered here.

For Regulatory Flexibility Act purposes only, NMFS established a small business size standard for businesses, including their affiliates, whose primary industry is commercial or recreational fishing ( 50 CFR $\S 200.2$ ). A business primarily engaged in fishing is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates) and has combined annual receipts not in excess of $\$ 11$ million, for all its affiliated operations worldwide.

Vessel ownership data ${ }^{29}$ were used to identify all individuals who own fishing vessels. Vessels were then grouped according to common owners. The resulting groupings were treated as entities, or affiliates, for purposes of identifying small and large businesses which may be affected by this action.
Affiliates potentially regulated by this action include any affiliates with federal for-hire permits for summer flounder, scup, black sea bass, and/or bluefish in any year between 2019-2021. A total of $\mathbf{6 8 8}$ affiliates were identified as being potentially regulated by this action, all of which were identified as small businesses based on their average revenues in 2019-2021.
Of these 688 affiliates, a total of $\mathbf{3 6 3}$ affiliates ( $53 \%$ ) reported that the majority of their revenues in 2021 came from for-hire fishing for any species. Some of these affiliates may have also participated in commercial fishing.

### 8.10.3 Economic Impacts on Regulated Entities

It is not possible to derive what proportion of the overall revenues for these for-hire affiliates came from fishing activities for an individual species. Nevertheless, given the popularity of summer flounder, scup, black sea bass, and bluefish as recreational species, revenues generated from these species are likely important to many of these businesses, at least at certain times of the year.
For-hire revenues are impacted by a variety of factors, including regulations and demand for forhire trips for summer flounder, scup, black sea bass, bluefish, and other potential target species; weather; the economy; and other factors.
As described in more detail in Section 7.1.1.2, preferred Alternative 1B (Percent Change Approach) is expected to have both moderate positive and moderate negative socioeconomic impacts for recreational fisheries. Alternative 1B would explicitly account for stock status and uncertainty in the recreational data when setting recreational measures, which could result in greater acceptance of the need to change measures, compared to the process used under the current FMP requirements (Alternative 1A). In addition, Alternative 1B would set measures for two years at a time, with changes made in interim years only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. This could provide some degree of stability in measures, which would generally be considered a beneficial socioeconomic impact.

As described in more detail in Section 5.1.2, in some circumstances, preferred Alternative 1B could result in measures that are more or less restrictive than they would otherwise need to be to allow the recreational fishery to meet but not exceed its catch and landings limits (i.e., recreational ACL and RHL). When measures are more restrictive than necessary to prevent ACL or RHL overages, this would result in foregone fishing opportunities. When measures are more liberal than would be necessary to prevent ACL or RHL overages, this could increase the likelihood of exceeding the ACL and triggering AMs in future years.

As described in more detail in Section 7.1.3.1, preferred Alternative 3A (no action on conservation equivalency) is expected to have moderate positive socioeconomic impacts as states would retain the ability to propose alternative measures through the Commission's conservation equivalency process. This would allow for measures that are tailored to the unique characteristics

[^22]of the fisheries in each state while still ensuring that harvest is constrained to the appropriate level defined by Alternative 1B (Percent Change Approach).

As described in more detail in Section 7.1.4, preferred Alternative 4B (F/Fmsy considered in AMs ) is expected to have both slight positive and slight negative socioeconomic impacts. This is because AMs would require restrictions in measures in response to ACL overages, which would result in negative socioeconomic impacts in the years when restrictions are implemented. In addition, by considering whether ACL overages contributed to overfishing in the overage years based on the most recent stock assessment information, Alternative 4B could have either slight positive or slight negative socioeconomic impacts depending on if this comparison results in a more or less strict AM response than would be needed if the ABC were considered rather than F/F $\mathrm{F}_{\text {MSY }}$ (Alternative 4A).

### 8.10.4 Analysis of Non-Preferred Alternatives

Additional non-preferred alternatives were also considered. All alternatives are described in detail in Section 5.

When considering the economic impacts of the alternatives under the Regulatory Flexibility Act, consideration should also be given to those non-preferred alternatives which would result in higher net benefits or lower costs to small entities while still achieving the stated objective of the action.

As described in more detail in Section 5, none of the alternatives in this action set specific bag, size, and season limits. Rather, the alternatives define the process for setting measures. Measures would be set and modified as necessary through the annual specifications process. The socioeconomic impacts of those measures will be analyzed through separate future specifications documents. Therefore, it is not possible to say that any other alternatives would result in higher net benefits or lower costs to small entities than the preferred alternatives.

### 8.11 Regulatory Impact Review

### 8.11.1 Determination of Significance Under E.O. 12866

Executive Order 12866 requires a Regulatory Impact Review in order to enhance planning and coordination with respect to new and existing regulations. This Executive Order requires the Office of Management and Budget to review regulatory programs that are considered to be "significant." This section demonstrates that this action is not a "significant regulatory action" because it will not affect in a material way the economy or a sector of the economy.

Executive Order 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant. A significant regulatory action is one that may:

- Have an annual effect on the economy of $\$ 100$ million or more,
- Adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities,
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency,
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof, or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.


### 8.11.2 Objectives for and Description of the Proposed Action

As described in more detail in Section 5, the preferred alternatives would modify the process for setting recreational bag size, and season limits such that measures would aim to achieve a percent change in harvest compared to expected harvest under status quo measures. The appropriate percent change would be informed by a comparison of harvest under status quo measures to the upcoming two-year average RHL, as well as a comparison of biomass to the target level (Section 5.1.2). The preferred alternatives would also modify one minor aspect of the recreational AMs such that, in some circumstances, consideration would be given to whether recreational ACL overages contributed to overfishing, as described in Section 5.4.2. These changes are being made through a framework adjustment to the Summer Flounder, Scup, and Black Sea Bass FMP and the Bluefish FMP ${ }^{30}$ under the authority of the MSA and regulations at 50 CFR part 648.

### 8.11.3 Baseline Conditions for Determination of Significance

Recent RHLs and harvest for each species are summarized in Section 6.1. As previously noted, information on for-hire revenues by species is not available. Section 8.10.3 contains summary information on for-hire revenues across all for-hire affiliates.

### 8.11.4 Summary of Economic Effects of the Proposed Measures

As described in more detail in Section 7.1.1.2, preferred Alternative 1B (Percent Change Approach) is expected to have both moderate positive and moderate negative socioeconomic impacts for recreational fisheries. Alternative 1B would explicitly account for stock status and uncertainty in the recreational data when setting recreational measures, which could result in greater acceptance of the need to change measures, compared to the process used under the current FMP requirements (Alternative 1A). In addition, Alternative 1B would set measures for two years at a time, with changes made in interim years only if new data suggest a major change in the expected impacts of those measures on the stock or the fishery. This could provide some degree of stability in measures, which would generally be considered a beneficial socioeconomic impact.

As described in more detail in Section 5.1.2, in some circumstances, preferred Alternative 1B could result in measures that are more or less restrictive than they would otherwise need to be to allow the recreational fishery to meet but not exceed its catch and landings limits (i.e., recreational ACL and RHL). When measures are more restrictive than necessary to prevent ACL or RHL overages, this would result in foregone fishing opportunities. When measures are more liberal than would be necessary to prevent ACL or RHL overages, this could increase the likelihood of exceeding the ACL and triggering AMs in future years.
As described in more detail in Section 7.1.3.1, preferred Alternative 3A (no action on conservation equivalency) is expected to have moderate positive socioeconomic impacts as states would retain the ability to propose alternative measures through the Commission's conservation equivalency process. This would allow for measures that are tailored to the unique characteristics

[^23]of the fisheries in each state while still ensuring that harvest is constrained to the appropriate level defined by Alternative 1B (Percent Change Approach).

As described in more detail in Section 7.1.4, preferred Alternative 4B (F/Fmsy considered in AMs ) is expected to have both slight positive and slight negative socioeconomic impacts. This is because AMs would require restrictions in measures in response to ACL overages, which would result in negative socioeconomic impacts in the years when restrictions are implemented. In addition, by considering whether ACL overages contributed to overfishing in the overage years based on the most recent stock assessment information, Alternative 4B could have either slight positive or slight negative socioeconomic impacts depending on if this comparison results in a more or less strict AM response than would be needed if the ABC were considered rather than F/F $\mathrm{F}_{\text {MSY }}$ (Alternative 4A).

### 8.11.5 Determination of Significant Regulatory Action

The proposed action does not constitute a significant regulatory action under EO 12866 as it will not have an annual effect on the economy of more than $\$ 100$ million and is not predicted to have a significant adverse impact on ports, recreational anglers, and operators of party/charter businesses. In addition, this action is consistent with previous actions by the Council, NMFS, and the Commission. There is no known conflict with other agencies. There are no known impacts on any entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof. There are no known conflicts with other legal mandates, the President's priorities, or the principles set forth in Executive Order 12866. The proposed actions are not precedent-setting or novel. As such, the Proposed Action is not considered significant as defined by EO 12866.

## 9 Literature Cited

Able, K.W. and M.P. Fahay. 1998. The first year in the life of estuarine fishes in the Middle Atlantic Bight. Rutgers University Press, New Brunswick, NJ. 342 p.
AWEA (American Wind Energy Association). 2020. U.S. Offshore Wind Power Economic Impact Assessment. https://supportoffshorewind.org/wp-content/uploads/sites/6/2020/03/AWEA Offshore-Wind-Economic-ImpactsV3.pdf
Bailey, H., B. Senior, D. Simmons, J. Rusin, G. Picken, and P. M. Thompson. 2010. Assessing underwater noise levels during pile-driving at an offshore windfarm and its potential effects on marine mammals. Marine Pollution Bulletin 60: 888-897.

Bailey, H., K. L Brookes, and P. M. Thompson. 2014. Assessing environmental impacts of offshore wind farms: lessons learned and recommendations for the future. Aquatic Biosystems 10(8): 1-13.
Beanlands, G.E., and P. N. Duinker. 1984. Ecological framework adjustment for environmental impact assessment. Journal of Environmental Management. 8:3.

Bergström, L., F. Sundqvist and U. Bergström (2013). Effects of an offshore wind farm on temporal and spatial patterns in the demersal fish community. Marine Ecology Progress Series 485: 199-210.
Bergström, L., L. Kautsky, T. Malm, R. Rosenberg, M. Wahlberg, N. Å. Capetillo, and D. Wilhelmsson. 2014. Effects of offshore wind farms on marine wildlife-a generalized impact assessment. Environmental Research Letters 9(3): 1-12.
Bigelow, H.B. and W.C. Schroeder. 1953. Fishes of the Gulf of Maine. U.S. Fish Wildl. Serv., Fish. Bull. 74.882 p.

Blaylock, J. and G.R. Shepherd. 2016. Evaluating the vulnerability of an atypical protogynous hermaphrodite to fishery exploitation: results from a population model for black sea bass (Centropristis striata). Fishery Bulletin 114(4): 476-489.

BOEM (Bureau of Ocean and Energy Management). 2020. Vineyard Wind 1 Offshore Wind Energy Project Supplement to the Draft Environmental Impact Statement. Appendix A.

Dannheim, J., L. Bergström, S. N. R. Birchenough, R. Brzana, A. R. Boon, J. W. P. Coolen, J.-C. Dauvin, I. De Mesel, J. Derweduwen, A. B. Gill, Z. L. Hutchison, A. C. Jackson, U. Janas, G. Martin, A. Raoux, J. Reubens, L. Rostin, J. Vanaverbeke, T. A. Wilding, D. Wilhelmsson, S. Degraer and J. Norkko (2019). Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research. ICES Journal of Marine Science.

Degraer, S., R. Brabant, B. Rumes and L. Vigin (2019). Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea: Marking a Decade of Monitoring, Research, and Innovation. Memoirs on the Marine Environment, Royal Belgian Institute of Natural Sciences, OD Natural Environment, Marine Ecology and Management: 134.

Drohan, A.F., J. P. Manderson, D. B. Packer. 2007. Essential fish habitat source document: black sea bass, Centropristis striata, life history and habitat characteristics, 2nd edition. NOAA Technical Memorandum NMFS NE 200; 68 p.

Ellison, W.T., B.L. Southall, C.W. Clark, and A.S. Frankel. 2011. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. Conservation Biology 26: 2128.

Ellison, W.T., B. L. Southall, A. S. Frankel, K. Vigness-Raposa, and C. W. Clark. 2018. Short Note: An Acoustic Scene Perspective on Spatial, Temporal, and Spectral Aspects of Marine Mammal Behavioral Responses to Noise. Aquatic Mammals 44(3): 239-243.

Finneran, J. J. 2015. Noise-induced hearing loss in marine mammals: a review of temporary threshold shift studies from 1996 to 2015. J. Acoust. Soc. Am. 138, 1702-1726. doi: 10.1121/1.4927418
Finneran, J.J. 2016. Auditory Weighting Functions and TTS/PTS Exposure Functions for Marine Mammals Exposed to Underwater Noise, Technical Report 3026, December 2016. San Diego: Systems Center Pacific.

Forney, K.A., B. L. Southall, E. Slooten, S. Dawson, A. J. Read, R. W. Baird, and R. L. Brownell Jr. 2017. Nowhere to go: noise impact assessments for marine mammal populations with high site fidelity. Endang. Species. Res. 32: 391-413

Gaichas, S., J. Hare, M. Pinsky, G. DePiper, O. Jensen, T. Lederhouse, J. Link, D. Lipton, R. Seagraves, J. Manderson, and M. Clark. 2015. Climate change and variability: a white paper to inform the MidAtlantic Fishery Management Council on the impact of climate change on fishery science and management. Second draft. Available at: http://www.mafmc.org/eafm/
Greene, J.K., M.G. Anderson, J. Odell, and N. Steinberg, eds. 2010. The Northwest Atlantic Marine Ecoregional Assessment: Species, Habitats and Ecosystems. Phase One. The Nature Conservancy, Eastern U.S. Division, Boston, MA. Available at: www.conservationgateway.org
Hare, J.A., W.E. Morrison, M.W. Nelson, M.M. Stachura, E.J. Teeters, R.B. Griffis, et al. 2016. A Vulnerability Assessment of Fish and Invertebrates to Climate Change on the Northeast U.S. Continental Shelf. PLoS ONE 11(2). Available at: http://journals.plos.org/plosone/article? $\mathrm{id}=10.1371 /$ journal.pone. 0146756 .

Hutchinson, Z.L., A.B. Gill, P. Sigray, H. He, and J.W. King. 2020. Anthropogenic Electromagnetic Fields (EMF) Influence the Behaviour of Bottom-Dwelling Marine Species. Scientific Reports 10 (1): 4219.

Johnson, M.R., Boelke, C., Chiarella, L.A., and Greene, K. 2019. Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes. Greater Atlantic Region Policy Series 19-01. 235p. https://www.greateratlantic.fisheries.noaa.gov/policyseries/index.php/GARPS/article/view/3

Langhamer, O. (2012). Artificial Reef Effect in relation to Offshore Renewable Energy Conversion: State of the Art. The Scientific World Journal: 8.

Lucey, S. M. and J. A. Nye. 2010. Shifting species assemblages in the northeast US continental shelf large marine ecosystem. Marine Ecology Progress Series. 415: 23-33.
Madsen, P.T., M. Wahlberg, J. Tougaard, K. Lucke, and P. Tyack. 2006. Wind turbine underwater noise and marine mammals: implications of current knowledge and data needs. Mar. Ecol. Prog. Ser. 309: 279295.

MAFMC (Mid-Atlantic Fishery Management Council). 2021. Amendment 7 to the Bluefish FMP. Available at https://www.mafmc.org/bluefish.

MAFMC (Mid-Atlantic Fishery Management Council). 2022. Amendment 22 to the Summer Flounder, Scup, and Black Sea Bass FMP. Available at https://www.mafmc.org/actions/sfsbsb-allocationamendment.

Methratta, E. and W. Dardick (2019). Meta-Analysis of Finfish Abundance at Offshore Wind Farms. Reviews in Fisheries Science and Aquaculture 27(2): 242-260.
NEFSC (Northeast Fisheries Science Center). 2015. $60^{\text {th }}$ Northeast Regional Stock Assessment ( $60^{\text {th }}$ SAW) assessment report. Northeast Fisheries Science Center Reference Document 15-08; 870 p.

NEFSC (Northeast Fisheries Science Center). 2017. 62nd Northeast Regional Stock Assessment Workshop (62nd SAW) Assessment Report. Northeast Fisheries Science Center Reference Doc. 1703.822 p. Available at: https://www.nefsc.noaa.gov/publications/crd/crd1703/

NEFSC (Northeast Fisheries Science Center). 2019. 66th Northeast Regional Stock Assessment Workshop (66th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 19-01; 40 p. Available from: http://www.nefsc.noaa.gov/publications/.

NEFSC (Northeast Fisheries Science Center). 2021a. Summer Flounder Management Track Assessment for 2021. 14p. Available at: https://www.mafmc.org/s/c_2021_summer_flounder_MTA_report.pdf.

NEFSC (Northeast Fisheries Science Center). 2021b. Scup Management Track Assessment for 2021. 14p. Available at: https://www.mafmc.org/s/c 2021 scup MTA report.pdf.
NEFSC (Northeast Fisheries Science Center). 2021c. Black Sea Bass Management Track Assessment for 2021. 9p. Available at: https://www.mafmc.org/s/c BSB Management-Track-Assessment 2021.pdf.

Nelms, S. E., Piniak, W. E., Weir, C. R., and Godley, B. J. 2016. Seismic surveys and marine turtles: an underestimated global threat? Biol. Conserv. 193, 49-65. doi: 10.1016/j.biocon.2015.10.020

NMFS (National Marine Fisheries Service). 2021. Endangered Species Act Section 7 Consultation on the: (a) Authorization of the American Lobster, Atlantic Bluefish, Atlantic, Deep-Sea Red Crab, Mackerel/Squid/Butterfish, Monkfish, Northeast Multispecies, Northeast Skate Complex, Spiny Dogfish, Summer Flounder/Scup/Black Sea Bass, and Jonah Crab Fisheries and (b) Implementation of the New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment 2.

National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office, Gloucester, Massachusetts; May 2021.
Nowacek, D. P., Thorne, L. H., Johnston, D. W., and Tyack, P. L. 2007. Responses of cetaceans to anthropogenic noise. Mamm. Rev. 37, 81-115. doi: 10.1111/j.1365-2907.2007.00104.x
Nowacek, D.P., C. W. Clark, D. Mann, P. JO. Miller, H. C. Rosenbaum, J. S. Golden, M. Jasny, J. Kraska, and B. L. Southall. 2015. Marine seismic surveys and ocean noise: time for coordinated and prudent planning. Front. Ecol. Environ. 13(7): 378-386. doi:10.1890/130286

NRC (National Research Council). 2000. Marine Mammals and Low-Frequency Sound: Progress Since 1994. Washington, DC: National Academies Press.

NRC (National Research Council). 2003. Ocean Noise and Marine Mammals. Washington, DC: National Academies Press.

NRC (National Research Council). 2005. Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects. Washington, DC: National Academies Press.

Nye, J. A., T. M. Joyce, Y.O. Kwon, and J.S. Link. 2011. Silver hake tracks changes in Northwest Atlantic circulation. Nature Communications. 2:412.

Packer, D. B, S. J. Griesbach, P. L. Berrien, C. A. Zetlin, D. L. Johnson, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Summer Flounder, Paralichthys dentatus, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-151.
Piniak, W. E. D. 2012. Acoustic Ecology of Sea Turtles: Implications for Conservation. Ph.D., Duke University.

Pinsky, M.L., B. Worm, M.J. Fogarty, J.L. Sarmiento, and S.A. Levin. 2013. Marine taxa track local climate velocities. Science. 341(6151): 1239-1242.
Popper, A., Hawkins, A., Fay, R., Mann, D., Bartol, S., Carlson, T., et al. 2014. Sound exposure guidelines for fishes and sea turtles: a technical report prepared by ANSI-accredited standards committee S3/SC1 and registered with ANSI. ASA S3/SC1 4.

Richardson, W. J., Greene, C. R. Jr., Malme, C. I., and Thomson, D. H. 1995. Marine Mammals and Noise. San Diego, CA: Academic Press.

Romano, T., Keogh, M., Kelly, C., Feng, P., Berk, L., Schlundt, C., et al. 2004. Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure. Can. J. Fish. Aquat. Sci. 61, 1124-1134. doi: 10.1139/f04-055

Salerno, D.J., J. Burnett, and R.M. Ibara. 2001. Age, growth, maturity and spatial distribution of bluefish, Pomatomus saltatrix (Linnaeus), off the northeast coast of the United States, 1985-96. J. Northwest Atl. Fish. Sci., 29: 31-39.

Slabbekoorn, H., Bouton, N., van Opzeeland, I., Coers, A., ten Cate, C., and Popper, A. N. 2010. A noisy spring: the impact of globally rising underwater sound levels on fish. Trends Ecol. Evol. (Amst). 25, 419-427. doi: 10.1016/j.tree.2010.04.005

Smith, W., P. Berrien, and T. Potthoff. 1994. Spawning patterns of bluefish, Pomatomus saltatrix, in the northeast continental shelf ecosystem. Bull. Mar. Sci. 54(1): 8-16.

Steimle, FW, Zetlin CA, Berrien PL, Johnson DL, Chang S. 1999. Essential fish habitat source document: Scup, Stenotomus chrysops, life history and habitat characteristics. NOAA Tech Memo NMFS NE 149; 39 p.

Steimle, FW, and CA Zetlin. 2000. Reef habitats in the middle Atlantic bight: abundance, distribution, associated biological communities, and fishery resource use. Marine Fisheries Review. 62: 24-42.. 62: 24-42.

Stenberg, C., J. G. Støttrup, M. van Deurs, C. W. Berg, G. E. Dinesen, H. Mosegaard, T. M. Grome and S. B. Leonhard (2015). Long-term effects of an offshore wind farm in the North Sea on fish communities. Marine Ecology Progress Series 528: 257-265.

Stenseth, N.C, Mysterud, A., Otterson, G., Hurrell, J.W., Chan, K., and M. Lima. 2002 Ecological Effects of Climate Fluctuations. Science 297(5585); 1292-1296.

Stevenson, D., L. Chiarella, D. Stephan, R. Reid, K. Wilhelm, J. McCarthy, M. Pentony. 2004. Characterization of the fishing practices and marine benthic ecosystems of the Northeast U.S. Shelf, and an evaluation of the potential effects of fishing on Essential Fish Habitat. NOAA Technical Memorandum NMFS-NE-181; 179 p .

Taormina, B., J. Bald, A. Want, G. Thouzeau, M. Lejart, N. Desroy, and A. Carlier. 2018. A Review of Potential Impacts of Submarine Power Cables on the Marine Environment: Knowledge Gaps, Recommendations and Future Directions. Renewable and Sustainable Energy Reviews 96: 380-91.

Taormina, B., C. Di Poi, A. Agnalt, A. Carlier, N. Desroy, R. H. Escobar-Lux, J. D'eu, F. Freytet, and C.M.F. Durif. 2020. Impact of Magnetic Fields Generated by AC/DC Submarine Power Cables on the Behavior of Juvenile European Lobster (Homarus Gammarus). Aquatic Toxicology 220: 105401.

Thomsen, F., Lüdemann, K., Kafemann, R. and Piper, W. 2006. Effects of offshore wind farm noise on marine mammals and fish, biola, Hamburg, Germany on behalf of COWRIE Ltd. https://tethys.pnnl.gov/sites/default/files/publications/Effects of offshore wind farm noise on mari ne-mammals_and_fish-1-.pdf

USCG (United States Coast Guard). 2020. The Areas Offshore of Massachusetts and Rhode Island Port Access Route Study.
https://www.navcen.uscg.gov/pdf/PARS/FINAL_REPORT_PARS_May_14_2020.pdf. 199 pp
Weilgart, L. 2013. A review of the impacts of seismic airgun surveys on marine life. Submitted to the CBD Expert Workshop on Underwater Noise and its Impacts on Marine and Coastal Biodiversity, 2527 February 2014, London, UK. Available at: http://www.cbd.int/doc/?meeting=MCBEM-2014-01

Weinberg, J. R. 2005. Bathymetric shift in the distribution of Atlantic surfclams: response to warmer ocean temperature. ICES Journal of Marine Science. 62(7): 1444-1453.

Wright, A. J., Soto, N. A., Baldwin, A. L., Bateson, M., Beale, C. M., Clark, C., et al. 2007. Do Marine mammals experience stress related to anthropogenic noise? Int. J. Comp. Psychol. 20, 274-316.

## 10 List of Agencies and Persons Consulted

In preparing this document, the Council consulted with NMFS, the New England and South Atlantic Fishery Management Councils, US Fish and Wildlife Service and the states of Maine through Florida through their membership on the Councils and Atlantic States Marine Fisheries Commission. The advice of NMFS GARFO personnel was sought to ensure compliance with NMFS formatting requirements. Copies of this document and other supporting documents are available from Dr. Christopher M. Moore, Executive Director, Mid-Atlantic Fishery Management Council, Suite 201, 800 North State Street, Dover, DE 19901, (302) 674-2331, http://www.mafmc.org.


[^0]:    ${ }^{1}$ As described in more detail in Section 7.2.1.1, Alternative 1A is expected to have different impacts for bluefish compared to summer flounder, scup, and black sea bass given that bluefish is currently under a rebuilding plan.

[^1]:    ${ }^{2}$ The Commission's Recreational Harvest Control Rule Addenda document is available at the summer flounder, scup, black sea bass, and bluefish management pages on the Commission's website (www.asmfc.org).

[^2]:    ${ }^{3}$ A discussion draft of the Strategic Plan for Reforming Recreational Black Sea Bass Management, developed by the Chair and Vice Chair of the Management Board is available at http://www.asmfc.org/home/2018-spring-meeting (see pages 207-216 of the supplemental briefing materials linked under the first agenda item).

[^3]:    ${ }^{4}$ Available at https://www.mafmc.org/actions/omnibus-recreational.

[^4]:    ${ }^{5}$ Additional information is available at https://www.mafmc.org/council-events/2021/ssc-peer-review-panel-sept20

[^5]:    ${ }^{6}$ Available at http://www.asmfc.org/species/summer-flounder and http://www.asmfc.org/species/black-sea-bass.
    ${ }^{7}$ Available at http://www.asmfc.org/species/scup.
    ${ }^{8}$ Available at http://www.asmfc.org/species/bluefish.

[^6]:    ${ }^{9}$ Additional information is available at https://www.mafmc.org/council-events/2021/ssc-peer-review-panel-sept20

[^7]:    ${ }^{10}$ The proposed $\mathrm{B} / \mathrm{B}_{\mathrm{MSY}}$ inflection points are based on the Council's Risk Policy. Future changes to the risk policy may warrant reconsideration of this process.

[^8]:    ${ }^{11}$ An example scoring system developed by the FMAT/PDT can be found in Appendix 3 of the Draft Addenda for Public Comment, available at:
    http://www.asmfc.org/files/PublicInput/HCR DraftAddenda_PublicComment_March2022.pdf.

[^9]:    ${ }^{12}$ A specific method for defining biomass trend was not defined; however, examples suggested by the FMAT/PDT can be found in Appendix 3 of the Draft Addenda for Public Comment, available at: http://www.asmfc.org/files/PublicInput/HCR DraftAddenda_PublicComment_March2022.pdf.

[^10]:    ${ }^{13}$ See previous footnote.

[^11]:    ${ }^{14}$ Additional information is available at https://www.mafmc.org/council-events/2021/ssc-peer-review-panel-sept20
    ${ }^{15}$ See previous footnote.

[^12]:    ${ }^{16}$ The current Commission guidelines for conservation equivalency, which apply across all FMPs, are available at http://www.asmfc.org/files/pub/ConservationEquivalencyGuidance 2016.pdf.

[^13]:    ${ }^{17}$ To estimate discards in pounds, multiply the number of dead discards times the average weight of fish in a given year.

[^14]:    ${ }^{18}$ Seabed form contains the categories of depression, mid flat, high flat, low slope, side slope, high slope, and steep slope.

[^15]:    ${ }^{19}$ A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct humancaused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).
    ${ }^{20}$ There are 2 species of pilot whales: short finned (G. melas melas) and long finned (G. macrorhynchus). Due to the difficulties in identifying the species at sea, they are often just referred to as Globicephala spp.
    ${ }^{21}$ This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins (NMFS Marine Mammal Stock Assessment Reports for the Atlantic Region).

[^16]:    ${ }^{22}$ For additional information on NMFS' initiative to reduce sea turtle bycatch in trawl fisheries, see: https://www.fisheries.noaa.gov/sea-turtle-bycatch-reduction-trawlfisheries?utm medium=email\&utm _source=govdelivery.

[^17]:    23 "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat."

[^18]:    ${ }^{24}$ See NMFS Ocean Noise Strategy Roadmap:
    https://cetsound.noaa.gov/Assets/cetsound/documents/Roadmap/ONS Roadmap Final_Complete.pdf
    ${ }^{25}$ See previous footnote.

[^19]:    26 The United States Coast Guard has considered transit and safety issues related to the Massachusetts and Rhode Island lease areas in a recent port access route study, and has recommended uniform 1 mile spacing in east-west and north-south directions between turbines to facilitate access for fishing, transit, and search and rescue operations. Future studies in other regions could result in different spacing recommendations (USCG 2020).

[^20]:    ${ }^{27}$ Climate vulnerability profiles for individual species are available at:
    https://www.st.nmfs.noaa.gov/ecosystems/climate/northeast-fish-and-shellfish-climate-vulnerability/index

[^21]:    ${ }^{28}$ Available at https://www.fisheries.noaa.gov/national/socioeconomics/social-indicators-coastal-communities

[^22]:    ${ }^{29}$ Affiliate data for 2019-2021 were provided by the NMFS NEFSC Social Science Branch.

[^23]:    ${ }^{30}$ The FMPs and subsequent amendments and framework actions are available at https://www.mafmc.org/sf-s-bsb and https://www.mafmc.org/bluefish.

