Draft FW65 biological impacts analysis, November 30, 2022

Gulf of Maine Cod Rebuilding Plan

The current rebuilding plan for GOM cod is set to end in 2024. In an August 13, 2021, letter from GARFO to NEFMC, Gulf of Maine cod was identified as making inadequate progress toward rebuilding following the 2019 stock assessment. The letter explains that the Council must implement a new rebuilding plan within 2 years of the date of notice (i.e., by August 13, 2023). Furthermore, the cod rebuilding plans may need to be modified after the 2023 research track for Atlantic cod is completed.

The most recent assessment of Gulf of Maine cod was a management track assessment in September 2021. The stock is overfished, and overfishing is occurring.

Current rebuilding plan: $F_{rebuild}$ = 0.161 (M=0.2 model) and 0.177 (M-ramp model)

The Council would select from one of the options below: Option A, Option B, or Option C.

The $F_{rebuild}$ would be in place for the 10 years of the plan, unless the Council was notified by NMFS that GOM cod is rebuilt, or the rebuilding plan was modified.

Options - $T_{target} = T_{max}$, which is 10 years (2033).

A. Tt_{arget} of 10 years, rebuilding by 2033, at $F_{rebuild}$ of 50%F_{MSY} = 0.087, which results in a 77% probability of achieving B_{MSY},

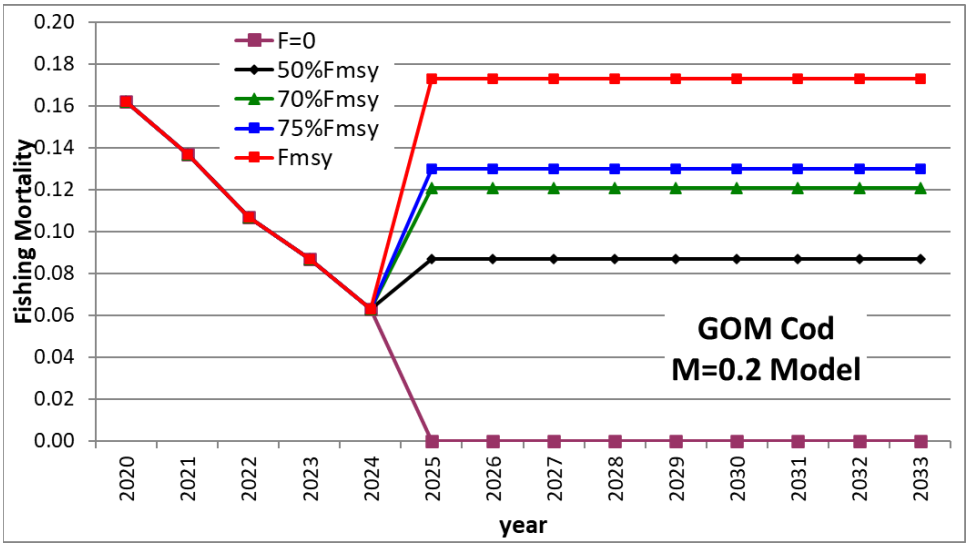
B. T_{target} of 10 years, rebuilding by 2033, at $F_{rebuild}$ of 70%F_{MSY}= 0.121, which results in a 62% probability of achieving B_{MSY}, or

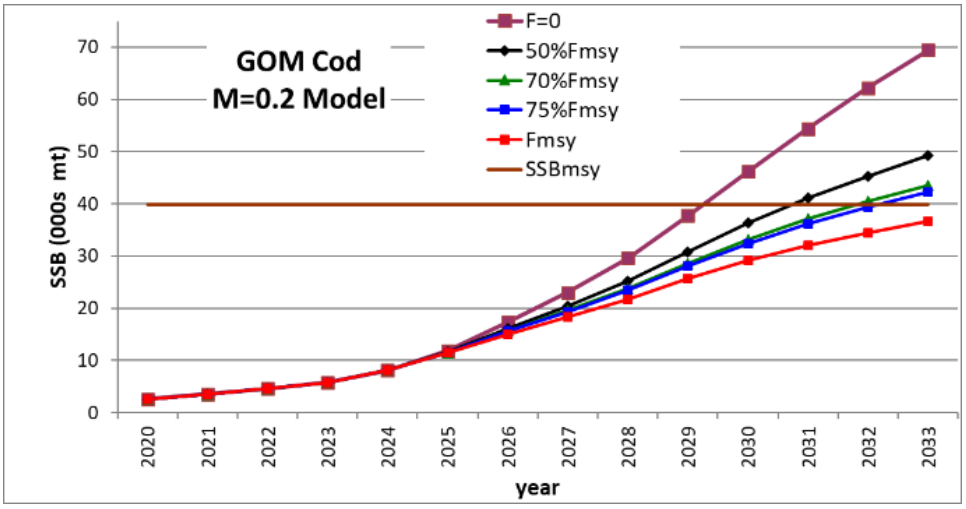
C. T_{target} of 10 years, rebuilding by 2033, at $F_{rebuild}$ of 75%F_{MSY} = 0.130, which results in a 58% probability of achieving B_{MSY}.

Analysis

Rebuilding projections were developed for GOM cod for the M=0.2 model (Figure 1) using projections that resample recruitment from the entire times series (1982-2017) of the assessment which is consistent with the projections used to estimate SSB_{MSY}. Projections were done assuming an updated PDT estimated bridge year catch in CY-2021, assumed ACLs, and F_{MSY} (F40% overfishing definition), 75%F_{MSY}, 70%F_{MSY}, 50%F_{MSY}, and F=0 for T-min from 2024 to 2033. The revised rebuilding plan is assumed to start in 2024 but there is no plan to revise the OFL and ABCs already in place for 2023 and 2024 (the SSC recommended maintaining the OFLs and ABCs in place). Projections were also run for the M-ramp model (Figure 2), but the stock cannot rebuild under the higher mortality assumption (M=0.4).

Figure 1- GOM cod rebuilding projection (M=0.2 model). Top plot is the fishing mortality, middle plot is for SSB with the red line indicating the SSBMSY to achieve the rebuilding target, and the bottom plot showing the catches given the fishing mortality rates.





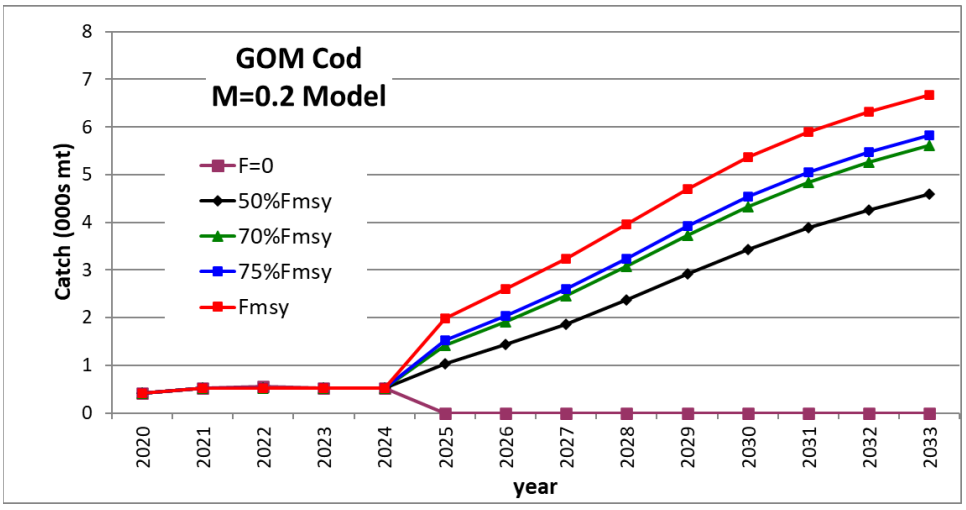
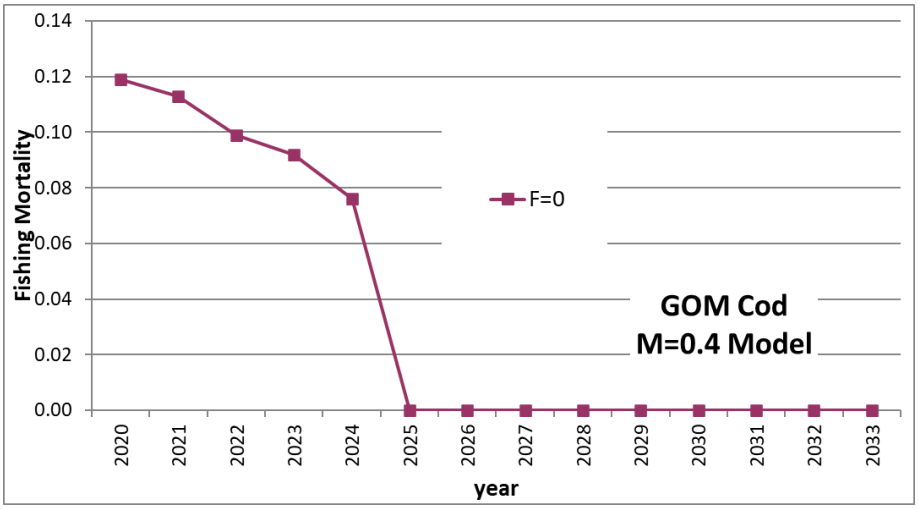
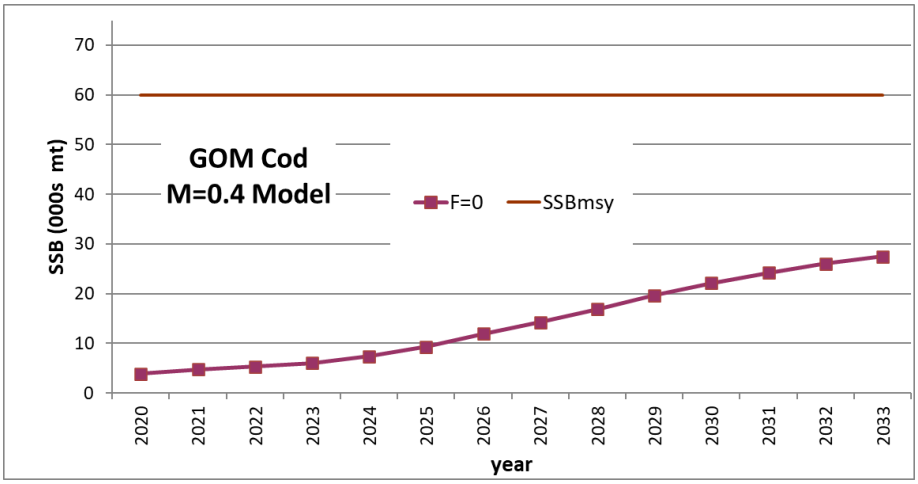
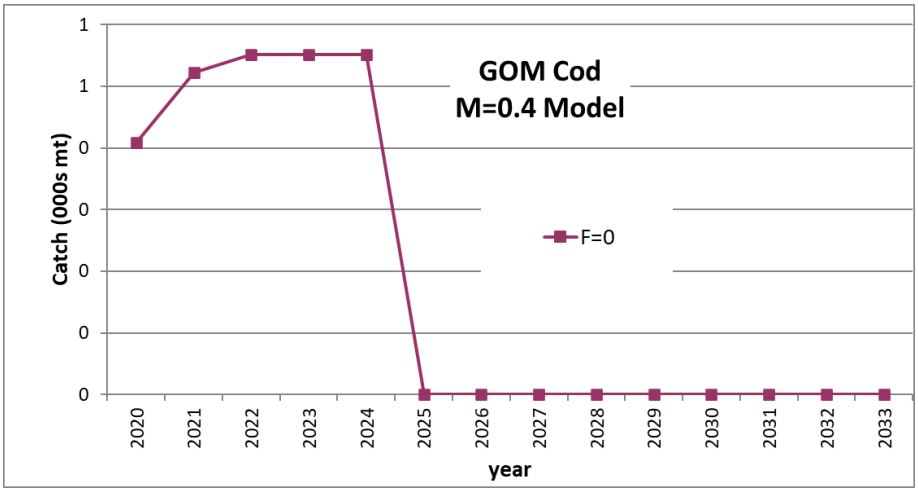


Figure 2- GOM cod rebuilding projection (M-ramp model). Top plot is the fishing mortality, middle plot is for SSB with the red line indicating the SSBMSY to achieve the rebuilding target, and the bottom plot showing the catches given the fishing mortality rates.







Impacts on regulated groundfish

For GOM cod, Alternative 2, Option A would result in lower fishing mortality at 50%F_{MSY} and therefore more rapid rebuilding than Alternative 1/No Action, or Option B or Option C at 70%F_{MSY} and 75%F_{MSY}, respectively. If fishing mortality were set at 50%F_{MSY}, this action may also reduce mortality on other regulated groundfish stocks, if GOM cod quota became limiting to the groundfish fishery, and therefore would be expected to have positive impacts on other regulated groundfish stocks in addition to GOM cod, as compared to Alternative 1/No Action. Alternative 2, Option B would result in a fishing mortality that would be slightly lower than that under Alternative 1/No Action. Alternative 2, Option B would be expected to result in more rapid rebuilding of the stock and would have a low positive impact on GOM cod and other regulated groundfish species as compared to Alternative 1/No Action. Alternative 2, Option C would also result in a fishing mortality that would be slightly lower than that under Alternative 1/No Action. Alternative 2, Option C would be expected to result in more rapid rebuilding of the stock and would have a low positive impact on GOM cod and other regulated groundfish species as compared to Alternative 1/No Action

Impacts on other species

Alternative 2, Option A would result in lower fishing mortality for GOM cod at 50%F_{MSY} and therefore interactions between the groundfish fishery and other species that are caught as target and bycatch on groundfish fishing trips could be reduced, and impacts on other species would be positive as compared to Alternative 1/No Action. Relative to Alternative 1/No Action, Alternative 2, Option B might indirectly reduce interactions between the groundfish fishery and other species that are caught as target and bycatch on groundfish fishing trips, because it would likely lead to fewer groundfish fishing trips in the GOM cod stock area, and therefore would be expected to have low positive impacts on other species. ACL and AM systems for other stocks, however, should prevent overfishing from occurring and so the possible impacts of Alternative 1/ No Action would not be expected to compromise mortality targets. Similarly, relative to Alternative 1/No Action, Alternative 2, Option C might indirectly reduce interactions between the groundfish fishery and other species that are caught as target and bycatch on groundfish fishing trips, and therefore would be expected to have low positive impacts on other species. All options are not expected to cause any other species to become overfished, primarily due to ACL and AM systems, and should have low positive impacts on other species.

Revised Specifications:

Impacts on regulated groundfish

Alternative 2 would reflect the results of the 2021 and 2022 management track assessments, and the 2022 Transboundary Resource Assessment Committee stock assessments for U.S./Canada stocks. Alternative 2 would adopt new ABC's that are consistent with the most recent science. Alternative 2 would also specify total allowable catches (TACs) for the U.S./Canada Management Area for FY2023. Details on the SSC's recommendations are located in Appendix XX. For stocks in formal rebuilding plans, a summary is provided in the Affected Environment. This summary incorporates the assessment results from the most recent stock assessments –2020, 2021, or 2022, as appropriate.

Relative to FY2022, FY2023, total ACLs under Alternative 2 would increase SNE/MA yellowtail flounder, CC/GOM yellowtail flounder, American plaice, GB winter flounder, GOM winter flounder, and SNE/MA winter flounder. There would be decreases in the total ACLs for GB haddock, GOM haddock, GB yellowtail flounder, witch flounder, redfish, white hake, pollock, northern windowpane flounder, ocean pout, and Atlantic halibut. There would be no change in the total ACLs for GOM cod, northern windowpane flounder, southern windowpane flounder, and Atlantic wolffish. The total ACL for GB cod

would either be an increase or remain the same as the total ACL for FY2022 (754 mt) depending on the option chosen of 754 mt or 904 mt.

Considering the differences between the ACLs in FY2022 and Alternative 2, the overall fishing mortality on regulated groundfish stocks would likely be lower under Alternative 2. When compared with Alternative 1/No Action, fishing mortality under Alternative 2 would likely be greater as many of the stocks would be under default specifications in FY 2023 from May 1 to October 31, 2023.

Revised specifications are determined according to updated stock assessments. These updated OFLs and ABCs are anticipated to prevent overfishing and increase the probability of rebuilding. Additional details by stock will be provided later. Refer to PDT memos: 3D_211022-GF-PDT-memos-to-SSC-combined_with_Appendices.pdf (s3.us-east-1.amazonaws.com) and SSC memo: 4.-SSC-Groundfish-Report-2022-11_23_22.pdf (s3.us-east-1.amazonaws.com)

Sub-ACLs for Other Fisheries

The ABCs and ACLs under Alternative 2 include specification of sub-ACLs for other fisheries.

Sub-ACLs are designed to limit the incidental catch of yellowtail flounder and windowpane flounder by the scallop fishery. Exceeding catch limits may trigger Accountability Measures for the scallop fishery. The overall impact of Alternative 2 ABCs and ACLs are likely to be slight positive, neutral, or slight negative with respect to the Atlantic sea scallop resource.

Scallop Framework 36 Overview:

Scallop Framework 36 will set fishery allocations for FY2023 and FY2024 (default). See Scallop PDT memo for the projected scallop fishery groundfish bycatch for the range of alternatives being considered: https://s3.us-east-1.amazonaws.com/nefmc.org/3E_221117-GF-PDT-memos-to-CMTE.pdf There are uncertainties in the bycatch projection estimates and the scallop fishery may realize values greater than or less than those projected. Generally based on these projections, the scallop fishery in FY2023 may exceed its sub-ACLs for GB yellowtail flounder (16.5 mt) and Northern windowpane flounder (31 mt), slightly exceed its sub-ACL for SNE/MA yellowtail flounder (2.7 mt), while staying under its sub-ACL for Southern windowpane flounder (129 mt).

In addition, sub-ACLs are designed to limit the incidental catch of GB yellowtail flounder by small-mesh fisheries, and exceeding the allocations results in triggering AMs in subsequent years. A summary of recent catches by the small-mesh fisheries will be provided (in the Affected Environment); see PDT memo: https://s3.us-east-1.amazonaws.com/nefmc.org/3D_211022-GF-PDT-memos-to-SSC-combined_with_Appendices.pdf. The Accountability Measure requires vessels to fish an approved selective trawl gear that reduces the catch of flatfish in the GB yellowtail flounder stock area. As small-mesh species can be effectively prosecuted using modified trawl gear, it is difficult to predict if groundfish sub-ACLs may affect fishing mortality and stock size of small-mesh species (e.g., whiting and squid). The overall impact of Alternative 2 ABCs and ACLs are likely to be slight positive to negligible with respect to the squid and whiting resource on Georges Bank.

Sub-ACLs are designed to limit the incidental catch of GOM and GB haddock by mid-water trawl (MWT) herring fisheries, and exceeding the allocations results in triggering AMs in-season. A summary of recent catches in the midwater trawl Atlantic herring fishery will be provided for GOM haddock and GB haddock (in the Affected Environment; see PDT memo: https://s3.us-east-1.amazonaws.com/nefmc.org/3E_221117-GF-PDT-memos-to-CMTE.pdf Alternative 2 for GOM and GB haddock would have the same sub-ACL as that in Alternative 1/No Action under default specifications as these would be adjusted based on the incoming recommendations and would have neutral impacts on the Atlantic herring stock when compared with Alternative 1/No Action for the first six months of the fishing

year. After which, Alternative 2 would have positive impacts compared with Alternative 1 as a sub-ACL would be specified for the full fishing year.

Lastly, the other sub-component of Southern windowpane flounder is used to evaluate if an AM would be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl fisheries). Exceeding the component and the overall ACL results in triggering AMs in a future year. AMs are GRAs designed to reduce catches of flatfish, which would have positive biological benefits for summer flounder and to a lesser extent scup by reducing fishing mortality. A summary of recent catches for other sub-components will be provided in the Affected Environment. Under Alternative 2, the ABC for Southern windowpane flounder would remain unchanged and would have neutral impacts when compared with Alternative 1/No Action.

Recreational Catch Target for Georges Bank Cod:

Impacts on regulated groundfish

The catch target itself is not expected to have direct impacts, positive or negative, on regulated groundfish species or other species because the total catch of GB cod is constrained by the overall ACL. Indirectly, the catch target serves as a marker for developing recreational measures that are evaluated later. If the catch target is higher, it shifts more of the ACL from a direct control (the sector ACE) into less certain controls of the recreational measures. Therefore, impacts to regulated groundfish from the catch target options under Alternative 3 may be neutral to low positive compared to Alternative 1/No Action (no catch target).

Impacts on other species

The catch target options would not be expected to have any direct biological impacts on other species.