



New England Fishery Management Council

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MEMORANDUM

DATE: November 29, 2019
TO: Groundfish Committee
FROM: Groundfish Plan Development Team
SUBJECT: **Draft impacts analysis for Framework Adjustment 59, version 2**

Draft Impacts Analysis

The Groundfish Plan Development Team (PDT) is working on the draft impacts analysis for Framework Adjustment 59 (FW59). “Version 1” of the impacts analysis included tables from the PDT’s draft biological impacts analysis (see Attachment 1). “Version 2”, this version, includes draft impacts sections for habitat, protected resources, economic impacts, and social impacts (see Attachment 2). The PDT plans to send the biological and remaining economic impacts (quota-change model results) analysis directly to the Council as separate documents.

Georges Bank Cod Recreational Catch Target

In addition, the Recreational Advisory Panel made the following motion related to Georges Bank (GB) cod on November 12, 2019:

The Recreational Advisory Panel (RAP) recommends to the Groundfish Committee updating the recreational catch target for GB cod:

- using the post-calibration (new) MRIP data average of recreational catches in CY2012-CY2016 (406 mt) from the 2019 stock assessment,
- then reduce this value by the percent change from fishing year 2019 to proposed fishing year 2020 in the US ABC (a decrease of 29%),
- resulting in a recreational catch target of 288 mt for FY2020-FY2022.

Rationale: This approach was developed with the understanding that an average of more recent data, which includes the post-calibration (new) MRIP data, would likely be used by NMFS when setting Georges Bank cod recreational measures.

Motion 3 carried 5/0/0.

The PDT did not include this option as an alternative in the document as the Groundfish Committee would need to discuss it at its upcoming meeting. If the RAP’s option was added to the document, here is the resulting specification breakdown for the Committee’s consideration:

| Stock | FY | OFL | US ABC | State-Waters Sub-Component | Other sub-component | Scallops | Groundfish Sub-ACL | Comm. Ground-fish Sub-ACL | Rec Ground-fish Sub-ACL | Preliminary Sectors Sub-ACL | Preliminary Non-sector Groundfish Sub-ACL | MWT or Small mesh Sub-ACL | Total ACL |
|--|-------------|------------|---------------|-----------------------------------|----------------------------|-----------------|---------------------------|----------------------------------|--------------------------------|------------------------------------|--|----------------------------------|------------------|
| <u>GB Cod*</u> | 2020 | | 1,301 | 39 | 286 | | 927 | 927 | | 895 | | 32 | 1,252 |
| <i>RAP Option: Recreational catch target 288 mt, FY2020-FY2022</i> | <u>2021</u> | | 1,301 | 39 | 286 | | 927 | 927 | | 895 | | 32 | 1,252 |
| | <u>2022</u> | | 1,301 | 39 | 286 | | 927 | 927 | | 895 | | 32 | 1,252 |

Values provided in metric tons, live weight, based on final 2019 sector rosters.

Values are rounded to the nearest metric ton.

Underlined indicates subject to adjustments in 2021 and 2020 based on US/CA quotas, 2020 CA quotas were used to adjust in the interim.

Includes adjustments for Canadian catches (*), and state waters component and other sub-component.

Attachment #1 – Draft tables for biological impacts analysis for Framework Adjustment 59

Table 1. Summary of recent catches (mt) of Georges Bank cod by the US commercial groundfish fishery, FY2015-FY2018 and preliminary in-season FY2019. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO, and FY2019 in-season catch report, GARFO, Nov. 19, 2019.

| | | <i>Commercial Groundfish Fishery- Georges Bank Cod</i> | | | | |
|-----------------------|---------|---|----------|---------|-----------------------|--|
| Fishing Year | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL | |
| 2015 | 1,787 | 1,608.5 | 28.3 | 1,636.8 | 92% | |
| 2016 | 608 | 571.9 | 24.6 | 596.6 | 98% | |
| 2017 | 531 | 432.8 | 13.1 | 446 | 78% | |
| 2018 | 1,519 | 833.2 | 4.7 | 837.9 | 62% | |
| <i>In-season 2019</i> | 1,568.2 | 226.5 | 5.1 | 231.7 | 15% | |

Table 2. Georges Bank cod recreational catch (mt), FY2011-FY2018. Sources: FY2011 – FY2018 final year-end multispecies catch reports, GARFO.

| | | <i>Recreational Fishery – Georges Bank Cod</i> | | | | |
|--------------|-----------------------------------|---|------------------------|----------------|--|--|
| Fishing Year | Federal Waters Recreational Catch | State Waters Recreational Catch | All Recreational Catch | Total US Catch | Recreational Portion of Total US Catch (Percent) | |
| 2011 | 54.6 | 0.0 | 54.6 | 3,405.9 | 1.6% | |
| 2012 | 62.7 | 4.4 | 67.1 | 1,724.1 | 3.9% | |
| 2013 | 8.0 | 0.0 | 8.0 | 1,616.3 | 0.5% | |
| 2014 | 75.9 | 15.5 | 91.4 | 1,514.4 | 6.0% | |
| 2015 | 132.1 | 33.0 | 165.1 | 1,835.4 | 9.0% | |
| 2016 | 419.7 | 57.8 | 477.5 | 1,125.5 | 42.4% | |
| 2017 | 50.1 | 2.8 | 52.9 | 522.5 | 10.1% | |
| 2018 | 31.6 | 5.5 | 37.1 | 887.3 | 4.2% | |

Table 3. Calculation of the GB cod catch target for the recreational fishery. Data source: Recreational catches in 2017 groundfish operational assessment of GB cod, NEFSC.

| Catch (mt) | Calendar Year | | | | | Recreational | |
|-----------------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|
| | 2012 | 2013 | 2014 | 2015 | 2016 | Average 12-16 | |
| Commercial landings | 2,007 | 1,312 | 1,514 | 1,300 | 1,109 | | |
| Commercial discards | 120 | 83 | 19 | 31 | 33 | | |
| Recreational landings | 56 | 6 | 88 | 124 | 369 | sum = | 643 |
| Recreational discards | 1 | 1 | 2 | 15 | 30 | sum = | 49 |
| Canadian landings | 395 | 384 | 430 | 472 | 428 | | |
| Canadian discards | 75 | 39 | 28 | 20 | 12 | | + |
| Catch for Assessment | 2,653 | 1,824 | 2,081 | 1,962 | 1,982 | | 692 |
| | | | | | | 5-yr avg | 138.4 |

Table 4. Summary of recent catches (mt) of Gulf of Maine cod by the US commercial groundfish fishery, groundfish FY2015-FY2018 and preliminary in-season FY2019. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO, and FY 2019 in-season catch report, GARFO, Nov. 19, 2019.

| <i>Commercial Groundfish Fishery- Gulf of Maine Cod</i> | | | | | |
|---|---------|----------|----------|-------|-----------------------|
| Groundfish Fishing Year | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL |
| 2015 | 207 | 172.4 | 14 | 186.4 | 90% |
| 2016 | 280 | 256.3 | 10.2 | 266.5 | 95% |
| 2017 | 280 | 250.3 | 18.6 | 268.8 | 96% |
| 2018 | 369 | 306.4 | 8.6 | 315 | 85% |
| <i>In-season 2019</i> | 360.4 | 113.1 | 5.4 | 118.5 | 32.9% |

Table 5. Summary of recent catches (mt) of GOM cod by the US recreational groundfish fishery, groundfish FY2015-FY2018. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO.

| Fishing Year | <i>Recreational Groundfish Fishery- Gulf of Maine Cod</i> | | | | |
|--------------|---|----------|----------|-------|-----------------------|
| | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL |
| 2015 | 121 | 4.5 | 80 | 84.5 | 69.8 |
| 2016 | 157 | 94.5 | 186.4 | 280.9 | 178.9 |
| 2017 | 157 | 26.6 | 218.8 | 245.4 | 156.3 |
| 2018 | 220 | 4.3 | 142.6 | 146.9 | 66.8 |

Table 6. Summary of recent catches (mt) of GOM haddock by the commercial groundfish fishery, groundfish FY2015-FY2018 and preliminary in-season FY2019. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO, FY2019 in-season catch report, GARFO, Nov.19, 2019.

| Fishing Year | <i>Commercial Groundfish Fishery- Gulf of Maine Haddock</i> | | | | |
|-----------------------|---|----------|----------|--------|-----------------------|
| | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL |
| 2015 | 958 | 683.1 | 46.2 | 729.3 | 76% |
| 2016 | 2416 | 1502.3 | 84.2 | 1586.5 | 66% |
| 2017 | 3017.3 | 2167 | 98 | 2265 | 75% |
| 2018 | 8738.4 | 2820 | 50.1 | 2870.1 | 33% |
| <i>In-season 2019</i> | 8311.8 | 2058.4 | 36.5 | 2094.9 | 25.2% |

Table 7. Summary of recent catches (mt) of GOM haddock by the commercial midwater trawl herring fishery, groundfish FY2015-FY2018. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO.

| Groundfish Fishing Year | <i>Midwater Trawl Atlantic Herring Fishery- Gulf of Maine Haddock</i> | | | | |
|-------------------------|---|----------|----------|-------|-----------------------|
| | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL |
| 2015 | 14 | - | - | - | - |
| 2016 | 34 | 1.9 | - | 1.9 | 5.7 |
| 2017 | 42 | - | - | - | - |
| 2018 | 122 | - | - | 0.0 | - |

Table 8. Summary of recent catches (mt) of Georges Bank haddock by the midwater trawl Atlantic herring fishery, groundfish FY2015- FY2018. Source: Groundfish FY2015 – FY2018 final year-end catch reports, GARFO.

| Groundfish Fishing Year | <i>Midwater Trawl- Georges Bank Haddock</i> | | | | |
|-------------------------|---|----------|----------|-------|-----------------------|
| | Sub-ACL | Landings | Discards | Catch | Percentage of sub-ACL |
| 2015 | 227 | 235.0 | 0.6 | 235.5 | 103.9% |
| 2016 | 512 | 115.3 | 3.6 | 118.9 | 23.2% |
| 2017 | 801 | 47.9 | 0 | 47.9 | 6.0% |
| 2018 | 680 | 43.9 | 0 | 43.9 | 6.5% |

Table 9. Recent GB yellowtail flounder TACs, groundfish fishery sub-ACLs, and catches for fishing years 2015 through in-season 2019, Nov. 19, 2019. Values shown in metric tons (mt). Source: GARFO year-end catch reports.

| Fishing Year | <i>Groundfish Fishery- GB Yellowtail Flounder</i> | | | | | | |
|----------------|---|------------|-------------|-----------------|-------------------------|-----------------------|-----------------------------------|
| | Total Shared TAC – US & CA (mt) | US % Share | US TAC (mt) | % US TAC Caught | Groundfish sub-ACL (mt) | Groundfish catch (mt) | Percent Groundfish ACL Caught (%) |
| 2015 | 354 | 70% | 248 | 27.5% | 202.9 | 38.4 | 18.9% |
| 2016 | 354 | 76% | 269 | 11.4% | 250.8 | 23.9 | 9.5% |
| 2017 | 300 | 69% | 207 | 40.6% | 162.6 | 31.4 | 19.1% |
| 2018 | 300 | 71% | 213 | 18.9% | 187.9 | 27.6 | 14.7% |
| In-season 2019 | 140 | 76% | 106 | n/a | 84.6 | 3.0 | 3.5% |

Table 10. Recent GB yellowtail TACs and scallop fishery sub-ACLs and catches. Values are shown in metric tons (mt).

| Groundfish Fishing Year | <i>Scallop Fishery- GB Yellowtail Flounder</i> | | | | | | |
|-------------------------|--|------------|--------|-----------------|-----------------|---------------|--------------------------|
| | Total Shared TAC | US % Share | US TAC | % US TAC Caught | Scallop sub-ACL | Scallop catch | % Scallop sub-ACL Caught |
| FY2015* | 354 | 70% | 248 | 28% | 38 | 29.7 | 78% |
| FY2016* | 354 | 76% | 269 | 12% | 42 | 2.1 | 5% |
| FY2017* | 300 | 69% | 207 | 44% | 32 | 52.6 | 164% |
| FY2018* | 300 | 71% | 213 | 19% | 15 | 12.7 | 87.5% |
| FY2019* | 140 | 76% | 106 | n/a | 17 | n/a | n/a |

* retention of GB yellowtail prohibited for scallop fishery
n/a = data not yet finalized.

Table 11. Recent GB yellowtail flounder small-mesh fisheries sub-ACLs and catches (mt) for fishing years 2015 through 2018. Values shown in metric tons (mt). Source: GARFO year-end catch reports. The sub-ACL was implemented in FY2013 and is not evaluated in-season. FY2019 is not available at this time. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO.

| Groundfish Fishing Year | <i>Small Mesh Fishery- GB Yellowtail Flounder</i> | | |
|-------------------------|---|---------------------------|---|
| | Small-mesh fisheries sub-ACL (mt) | Small-mesh fisheries (mt) | Percent small-mesh fisheries Caught (%) |
| FY2015 | 5 | 0.1 | 1.0% |
| FY2016 | 5 | 4.8 | 95.2% |
| FY2017 | 4 | 0.4 | 9.7% |
| FY2018 | 4 | 0.1 | 2.5% |
| In-season FY2019 | 2 | n/a | n/a |

Table 12. Recent SNE/MA yellowtail flounder ACLs, scallop fishery sub-ACLs and catches, and groundfish fishery sub-ACLs and catches. Values shown in metric tons (mt).

| <i>Scallop and Groundfish Fishery—SNE/MA Yellowtail Flounder</i> | | | | | | | | | |
|--|----------------|------------------|--------------------------|----------------------|--------------------|----------------------------|-------------------------|-----------------------|-------------------------------|
| Groundfish Fishing Year | Total ACL (mt) | Total Catch (mt) | Percent Total ACL Caught | Scallop sub-ACL (mt) | Scallop Catch (mt) | Percent Scallop ACL Caught | Groundfish sub-ACL (mt) | Groundfish Catch (mt) | Percent Groundfish ACL Caught |
| FY2015* | 666 | 326.6 | 49% | 44 | 34.6 | 79.1% | 579 | 283.5 | 48.9% |
| FY2016* | 256 | 85.2 | 33.3% | 17 | 10.7 | 63.9% | 204 | 62.5 | 30.6% |
| FY2017* | 256 | 24.4 | 9.6% | 4 | 4.3 | 104.1 | 187.5 | 14.5 | 6.7% |
| FY2018 | 66 | 14.7 | 22.3% | 3 | 2.6 | 79.7% | 43 | 8.5 | 19.6% |

* Indicates that retention of SNE/MA YT was prohibited for scallop fishery

Table 13. Final year-end catch data (mt) for northern windowpane flounder. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO. *In FY2017 a scallop-specific AM was created, in previous years scallop landings were part of the ‘other’ fisheries catch, reflected here.

| | | | Northern Windowpane Flounder Catch (mt) | | | | |
|-------|-----|-------------|---|-------------|-----------------|--------------|-------|
| | | | Groundfish Fishery | | Sub-Components | | |
| FY | ACL | Total Catch | Sector | Common Pool | Scallop Fishery | State Waters | Other |
| 2015 | 144 | 189.8 | 73.6 | 0 | 114.6 | 1.3 | 114.9 |
| 2016 | 177 | 83.7 | 45.0 | 0 | 31.8 | .7 | 37.9 |
| 2017* | 170 | 87.4 | 33.9 | 1.2 | 44.1 | .5 | 7.7 |
| 2018 | 86 | 56.7 | 33 | .3 | 22.3 | .4 | .7 |

Table 14. Final year-end catch data (mt) for southern windowpane flounder. Sources: FY2015 – FY2018 final year-end multispecies catch reports, GARFO.

| | | | Southern Windowpane Flounder Catch (mt) | | | | |
|------|-----|-------------|---|-------------|-------------------------|--------------|-------|
| | | | Groundfish Fishery | | Sub-Components with AMs | | |
| FY | ACL | Total Catch | Sector | Common Pool | Scallop Fishery | State Waters | Other |
| 2015 | 527 | 22.7 | - | .2 | - | 22.1 | 0.5 |
| 2016 | 599 | 417.2 | 45 | 0 | 84.4 | 28 | 178.1 |
| 2017 | 599 | 440.9 | 33.9 | 1.2 | 44.1 | 0.5 | 7.7 |
| 2018 | 457 | 454.7 | 49.7 | 16.8 | 157.1 | 26.1 | 205 |

6.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

6.3 IMPACTS ON ESSENTIAL FISH HABITAT

The Essential Fish Habitat (EFH) impacts discussion below focuses on changes in the amount or location of fishing that might occur as a result of the implementation of the various alternatives. This approach to evaluating adverse effects to EFH is based on two principles: (1) seabed habitat vulnerability to fishing effects varies spatially, due to variations in seabed substrates, energy regimes, living and non-living seabed structural features, etc., between areas and (2) the magnitude of habitat impacts is based on the amount of time that fishing gear spends in contact with the seabed. This seabed area swept (seabed contact time) is grossly related to the amount of time spent fishing, although it will of course vary depending on catch efficiency, gear type used, and other factors.

The area that is potentially affected by the proposed alternatives includes EFH for species managed under the following Fishery Management Plans: NE Multispecies; Atlantic Sea Scallop; Monkfish; Atlantic Herring; Summer Flounder, Scup and Black Sea Bass; Atlantic Mackerel, Squid, and Butterfish; Spiny Dogfish; Tilefish; Deep-Sea Red Crab; Atlantic Surfclam and Ocean Quahog; Atlantic Bluefish; Northeast Skates; and Atlantic Highly Migratory Species.

6.3.1 Action 1 – Specifications

Action 1 encompasses adjustments to overall catch limits for certain stocks (Alternative 2), as well as possible changes to how certain sub-allocations are made (Alternative 2, Options A-E).

6.3.1.1 Alternative 1 - No Action

Under Alternative 1 (No Action) there would be no changes to the specifications identified under the prior frameworks (Frameworks 57 and 58), which apply for most stocks in the fishery. However, the three Georges Bank transboundary stocks (cod, haddock, and yellowtail flounder) require annual catch limit specifications, and under Alternative 1 limits would be set at default levels for Eastern GB cod and Eastern GB haddock. The defaults are 35% of the 2019 limits for each stock, from the start of the fishing year on May 1, 2020 through July 31, 2020.

After July 31, 2020, ACLs would not be defined for EGB cod or haddock in the multispecies groundfish fishery. Without specification of these ACLs, catches would not be allocated to the groundfish fishery (sectors or common pool vessels) and targeted groundfish fishing activity would not occur for these stocks. Catches would not be eliminated because there would likely be incidental catches in other fisheries.

In addition to the lack of targeted groundfish fishing activity on EGB for these stocks, certain provisions of the sector management system would probably constrain fishing even for stocks with an ACL. Regulations require that a sector stop fishing in a stock area if it does not have ACE for a stock. Fishing can continue on other stocks only if the sector can demonstrate it would not catch the ACE-limited stock. Thus, there would be little opportunity for sector vessels to fish in the EGB management area.

Alternative 1 would result in low negative impacts on EFH as fishing activity, mainly bottom-trawl gears which have adverse impacts to EFH, would continue for the first three months of the fishing year in the EGB management area and year-round in all other areas. The default specifications for EGB would continue to allow fishing for the first three months of the fishing year, but after that, effort and impacts to EFH would decline for stocks managed or located in that area. Thus, Alternative 1 would be expected to have positive impacts compared to the alternative specifications under Alternative 2.

6.3.1.2 Alternative 2 – Revised Specifications

Under Alternative 2, the annual specifications for FY2020 – FY2022 for GB cod, GOM cod, GB haddock, GOM haddock, GB yellowtail flounder, CC/GOM yellowtail flounder, SNE/MA yellowtail flounder, GB winter flounder, American plaice, witch flounder, pollock, white hake, Atlantic halibut, Northern windowpane flounder, and Southern windowpane flounder would be as specified as in Table 5 (see draft alternatives, dated Nov. 25, 2019). Compared to FY2019, the TAC for eastern GB cod is essentially flat under Alternative 2 and the TACs increase for eastern GB haddock and GB yellowtail flounder (Table 4, draft alternatives, dated Nov. 25, 2019). Annual catch limits for other stocks in the fishery variously increase or decrease; some of these changes may prove constraining on the fishery, while others provide an opportunity to increase fishing on a stock. Among the highest utilization stocks in FY2018, there would be an increase in the commercial groundfish sub-ACL for witch flounder and American plaice in FY2020 relative to FY2019 under Alternative 2, a decrease for GB cod, GOM cod, and white hake, and a similar sub-ACL for SNE/MA winter flounder. White hake catches were greater than the proposed FY2020 sub-ACL during both FY2017 and FY2018. GOM cod catches were greater than the proposed FY2020 sub-ACL during FY2018. Following these changes, resultant increases in effort in the commercial bottom trawl fishery could be expected to lead to increases in impacts to EFH, whereas decreases in effort in the bottom trawl fishery are expected to reduce impacts to EFH. Changes in fixed commercial gear (longline, gillnet) effort and changes in recreational fishing are not expected to affect the magnitude of impacts to EFH.

In the Gulf of Maine, both American plaice and witch flounder have commercial ACL increases between FY 2019 and FY 2020 of 79% and 53%, respectively. These could provide increased fishing opportunities. White hake, on the other hand, shows a 26% decrease in commercial ACL under Alternative 2 as compared to FY 2019. Additionally, the Alternative 2 commercial groundfish white hake ACL is 2,019 mt, which is very similar to FY 2018 groundfish fishery catches (2,097.1 mt). The Alternative 2 commercial ACL for GOM cod is 275 mt; this is less than FY 2018 commercial groundfish catches of 315 mt. So far in 2019, commercial groundfish catch of GOM cod is only 118.5 mt. Although there are 5+ months remaining in the fishing year, this suggests that the fishery can avoid GOM cod. Overall there could be an increase in fishing activity in the GOM during FY 2020 to target plaice and witch flounder, provided that the fishery can remain within limits for cod and white hake. This could result in slight negative impacts to EFH, although plaice and witch flounder tend to occur on soft bottom which is less vulnerable to the impacts of fishing gear, thus mitigating any negative effects to some extent.

On Georges Bank, northern windowpane flounder could prove constraining on the commercial fishery for other stocks if bycatch avoidance of windowpane flounder occurs. The Alternative 2 commercial northern windowpane flounder sub-ACL is 38 mt. This is a 40% decrease from FY2019, and only slightly more than combined sector and common pool catches for FY 2018 (33.3 mt). The Alternative 2 commercial GB cod sub-ACL for 2020 is 1,081 mt, which represents a 31% decrease from the prior year. However, this ACL is slightly more than the combined sector and common pool catches for FY 2018 (837.9 mt), and 2019 GB cod catches are presently estimated at 231.7 mt, which suggests that the fishery is able to avoid cod if needed (although there are 5+ months remaining in the 2019 fishing year). Thus, fishing effort on Georges Bank could remain at similar levels to FY 2019, resulting in no substantial change in the fishery's effects on EFH, positive or negative.

In Southern New England, the Alternative 2 commercial sub-ACL for windowpane flounder is 48 mt; this represents a 9% decrease and is less than the FY 2018 commercial catch of 66.5 mt. The Alternative 2 SNE/MA yellowtail flounder commercial groundfish ACL is very small at 15 mt, a decrease of 53% compared to FY 2019, but catches of the stock have been low in recent years, such that the fishery seems able to avoid the stock. For example, the FY 2018 sector and common pool ACLs were 35 mt and 8 mt, and catches were only 7.0 mt and 1.5 mt. Overall, fishing effort in Southern New England could remain at

similar levels to FY 2019, resulting in no substantial change in the fishery's effects on EFH, positive or negative.

6.3.1.2.1 Option A – Recreational Fishery Georges Bank Cod Catch Target

This catch target informs the development of recreational fishery management measures; without one there is a risk that the overall catch limit on the stock could be exceeded. Under Option A1 (No Action), the recreational catch target for Georges Bank cod would remain in place for FY 2020. However, the catch target would not continue after FY 2020. Option A2 would extend the existing catch target through 2022. While specification of a target may have positive impacts on the cod stock, recreational fishing gears do not have adverse effects on EFH, and therefore possible changes to the recreational fishery under Option A2 as compared to Option A1 will not affect the magnitude of the groundfish fishery's impacts on EFH. Both Option A1 and Option A2 are expected to have neutral impacts on EFH.

6.3.1.2.2 Option B – Allocation between Commercial and Recreational Fisheries for Gulf of Maine Cod and Gulf of Maine Haddock

The allocation of GOM cod and haddock between the recreational and commercial fisheries informs the development of management measures to achieve catch targets and determines accountability should targets be exceeded. Under Option B1, the recreational allocations are 33.7% and 27.5% for cod and haddock, respectively. Under Option B2 these increase to 37.5% and 33.9%. Recreational fishing gears do not have adverse effects on EFH. Therefore, Option B2, which facilitates increased recreational harvest of these two stocks, may reduce negative impacts of the commercial fishery on EFH as compared to Option B1.

6.3.1.2.3 Option C – Closed Area I Hook Gear Haddock Special Access Program

Option C relates to allocations of a small percentage of the GB cod TAC to special programs. Under Option C1, the incidental catch TAC is allocated across the B DAS program, the Eastern US/CA haddock SAP, and the CAI hook gear haddock SAP. Under Option C2, the allocation for the CAI SAP is eliminated but the overall amount of the incidental catch TAC is reduced. Thus, there is essentially no difference in the B DAS and Eastern US/CA SAP allocations between the two options (see Table 8 for details, in the draft alternatives, dated Nov. 25, 2019). Combining the reduction in the overall incidental limit with the re-allocation between categories, selection of either Option C1 or Option C2 should not affect fishing activity and therefore should not affect the magnitude of the fishery's impacts on EFH. Therefore, impacts are expected to be neutral when comparing Option C1 and Option C2.

6.3.1.2.4 Option D– Midwater Trawl Atlantic Herring Fishery sub-ACL for Georges Bank Haddock

Option D relates to the specification of a sub-ACL for the herring fishery. Under Option D1, the sub-ACL would continue to be set at 1.5% of the US ABC, less 7% of the resulting value for management uncertainty. Option D2 would increase this percentage to 2%, less 7% for management uncertainty. The two options are likely neutral with respect to one another in terms of impacts to EFH. In terms of the groundfish fishery, GB haddock is underutilized and allocating 2 vs. 1.5% to the herring fishery will likely not affect fishing effort. The increased allocation could allow greater utilization of the herring resource, and greater herring fishing, but herring harvest on Georges Bank is done with midwater trawls, which do not have adverse impacts to EFH that are more than minimal. Therefore, a change in the magnitude of effort in the Georges Bank herring fishery is not expected to influence the magnitude of impacts to EFH. Furthermore, herring allocations are quite low in the coming years, such that effort in that fishery should be reduced relative to recent levels.

6.3.1.2.5 Option E – Atlantic Sea Scallop Fishery sub-ACL for Southern New England/Mid-Atlantic Yellowtail Flounder

Sub-ACLs are designed to limit the incidental catch of yellowtail flounder by the scallop fishery. Option E1 would maintain the 16 mt limit set in FW 57 for 2020, and there would be no sub-ACL beyond 2020.

Option E2 would set the sub-ACL at 90% of projected catch. Depending on the specifications set in scallop FW 32, this could be as high as 2 mt, but could be lower. In recent years, this 90% limit has allowed for full utilization of the scallop resource. Thus, although the Option E2 limit is lower than the Option E1 limit, effort and therefore EFH impacts in the scallop fishery should be similar regardless of alternative. Thus, Option E2 is expected to have neutral impacts relative to Option E1, at levels that will be described in scallop FW 32.

6.3.2 Action 2 – Recreational Fishery Measures for Georges Bank Cod

6.3.2.1 Alternative 1 – No Action

Under the No Action alternative, the Regional Administrator would not have the temporary authority to adjust recreational management measures for Georges Bank cod, and Council action would be needed to adjust the management measures. While withholding this authority could have negative impacts on the cod stock, recreational fishing gears do not have adverse effects on EFH, and therefore possible changes to the recreational fishery under Alternative 2 as compared to Alternative 1 will not affect the magnitude of the groundfish fishery's impacts on EFH. Both alternatives are expected to have neutral impacts on EFH.

6.3.2.2 Alternative 2 – Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod

This alternative would grant the Regional Administrator with temporary flexibility to adjust the recreational management measures for Georges Bank cod without requiring action by the Council. While granting this authority could have positive impacts on the cod stock, recreational fishing gears do not have adverse effects on EFH, and therefore possible changes to the recreational fishery under Alternative 2 as compared to Alternative 1 will not affect the magnitude of the groundfish fishery's impacts on EFH. Both alternatives are expected to have neutral impacts on EFH.

6.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

6.4 IMPACTS ON ENDANGERED AND OTHER PROTECTED SPECIES

The FW59 alternatives are evaluated for their impacts on species protected under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. Section XX of the Affected Environment Section contains a complete list of protected species (i.e., ESA listed and MMPA protected species) that inhabit the areas of operation for the Northeast multispecies fishery. This impact analysis considers how the fishery may overlap with protected species in time and space, as well as records of protected species interaction with particular gear types (e.g. gillnet, bottom otter trawl).

6.4.1 Action 1 – Specifications

Action 1 encompasses adjustments to overall catch limits for certain stocks (Alternative 2), as well as possible changes to how certain sub-allocations are made (Alternative 2, Options A-E).

6.4.1.1 Alternative 1 - No Action

Under Alternative 1/No Action, the ACLs specified for FY2020 would be unchanged from those adopted through FW57 and FW58. There would be no changes to the specifications for FY2020 (Table 2, see draft alternatives, dated Nov. 25, 2019). Default specifications would be in effect from May 1, 2020, to July 31, 2020, and would equal 35% of the FY2019 catch limits, which would only be necessary for EGB cod and EGB haddock and would use FY2019 catch limits as a basis for also adjusting GB cod and GB haddock for expected Canadian catches. There would be no new FY2020 quotas specified for the transboundary Georges Bank stocks (i.e. GB cod, GB haddock, GB yellowtail flounder), which are managed through the US/CA Resource Sharing Understanding. These quotas are specified annually.

Under Alternative 1/No Action, the directed groundfish fishery would be expected to operate in all broad stock areas through July 31, 2020; during this timeframe, minimal changes in fishing effort, relative to current operating conditions, are anticipated. However, on August 1, 2020, EGB cod and EGB haddock would not have ACLs specified. In the absence of stock specific specifications, commercial groundfish vessels would not be allowed to fish in the EGB management area without an allocation. As a result, after July 31, 2020, commercial groundfish fishing effort in the EGB management area is expected to be reduced. As all other stocks would have specifications that would not expire on July 31, 2020, and these specifications are not significantly different from those authorized over the last 5 or more years, significant changes in fishing effort would not be expected in all other broadstock areas through FY2020. Based on this information, fishing effort and behavior under Alternative 1/No Action is expected to remain similar to current operating conditions with the potential for effort to decline in the EGB management area after July 31, 2020.

Understanding expected fishing behavior/effort in a fishery informs potential interaction risks with protected species (ESA listed and MMPA protected species). Specifically, interaction risks with protected species are strongly associated with amount, time, and location of gear in the water, with risk of an interaction increasing with increases of any or all these factors. Taking into consideration the latter, as well as fishing behavior/effort under the Alternative 1/No Action, impacts of Alternative 1/No Action to protected species are provided below.

MMPA (Non-ESA listed) Protected Species Impacts

Impacts of Alternative 1/No Action on marine mammals (i.e., species of cetaceans and pinnipeds) are somewhat uncertain as quantitative analysis has not been performed. However, we have considered, to the best of our ability, the most recent (2010-2016) information on non-ESA listed marine mammal interactions with commercial fisheries, of which, the groundfish fishery is a component (Hayes et al. 2018; Hayes et al. 2019). Aside from humpback whales, pilot whales, and several stocks of bottlenose dolphin, there has been no indication that takes of non-ESA listed species of marine mammals in commercial fisheries has gone above and beyond levels which would result in the inability of each species population to sustain itself (Hayes et al. 2018; Hayes et al. 2019). Specifically, aside from MMPA strategic stocks identified in Table X in the Affected Environment (i.e., humpback whales, pilot whales, and several stocks of bottlenose dolphin), potential biological removal (PBR) levels have not been exceeded for any of the non-ESA listed marine mammal species identified in Section XX: Affected Environment (Hayes et al. 2018; Hayes et al. 2019). Although humpback whales, pilot whales, and several stocks of bottlenose dolphin have experienced levels of take that have resulted in the exceedance of each species PBR level, take reduction strategies and/or plans have been implemented and are currently in place to reduce bycatch in the fisheries affecting these species (Atlantic Trawl Gear Take Reduction Strategy, Atlantic Large Whale Take Reduction Plan, Pelagic Longline Take Reduction Plan; Bottlenose Dolphin Take Reduction Plan; see Sections X and X: Affected Environment for additional information). Although the most recent information presented in Hayes et al. (2018) and Hayes et al. (2019) is a collective representation of commercial fisheries interactions with non-ESA listed species of marine mammals, and does not address the effects of the groundfish fishery specifically, the information does demonstrate that thus far, current management measures are keeping most marine mammal species below PBR; exceptions include marine mammal strategic stocks of: humpback whales, pilot whales and bottlenose dolphin stocks (Hayes et al. 2018; Hayes et al. 2019.)

Based on the above information, and the fact that the groundfish fishery must comply with specific take reduction plans (i.e., HPTRP, the BDTRP, ALWTRP; see Section XX: Affected Environment); and that voluntary measures exist that reduce serious injury and mortality to marine mammal species incidentally caught in trawl fisheries (see the Atlantic Trawl Gear Take Reduction Team in Section X: Affected Environment), Alternative 1/No Action is expected to have low negative impacts on non-ESA listed species of marine mammal.

ESA Listed Species

The groundfish fishery is prosecuted primarily with bottom otter trawl and gillnet gear. As provided in Section XX: Affected Environment, ESA listed species of whales, sea turtles, Atlantic sturgeon, and Atlantic salmon are vulnerable to interactions with these gear types, with interactions often resulting in the serious injury or mortality to the species. Based on this, the groundfish fishery is likely to result in some level of negative impacts to ESA listed species. Taking into consideration fishing behavior/effort under Alternative 1/No Action, as well the fact that interaction risks with protected species are strongly associated with the amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all of these factors, we determined the level of negative impacts to ESA listed species to be low. Below, we provide support for this determination.

As provided above, Alternative 1/No Action alternative will set specifications for FY2020 - FY2022; these specifications would remain unchanged from those adopted in FW57 and FW58. As specifications under Alternative 1/No Action are no greater than those authorized over the last 5 or more years, resultant fishing behavior and effort in the groundfish fishery is expected to remain similar to what has been

observed in the fishery over this timeframe. Specifically, the number of bottom trawls and gillnets, tow or soak times, and area fished are not expected to change significantly from current operating conditions. As noted above, interaction risks with protected species are strongly associated with the amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all of these factors. Continuation of “status quo” fishing behavior/effort is not expected to change any of these operating conditions. Based on this, and the fact that the groundfish fishery must comply with the ALWTRP, the impacts of Alternative 1/No Action alternative on ESA listed species is expected to be low negative.

Overall Impacts to Protected Species

Based on the above protected species impact analysis, overall impacts of Alternative 1/No Action on protected species (ESA listed and MMPA protected) are expected to be low negative. Relative to Alternative 2, Alternative 1/No Action may result in neutral to low positive impacts to protected species. Although the total ACLs between Alternative 1/No Action and Alternative 2 do vary, all proposed ACLs are within the range of ACLs authorized within the fishery over the last 5 (or more) years. As a result, any changes in fishing effort or behavior between either Alternative are not expected to be significant. However, as Alternative 1/No Action will not have specifications specified for EGB cod or haddock after July 31, 2020, some reduction in effort is possible in this management area. The latter potentially equates to less fishing time, and therefore, less gear being present in the water. As protected species (ESA listed and MMPA species) interactions with gear, regardless of listing status, is greatly influenced by the amount of gear, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, any decrease in either of these factors will reduce the potential for protected species interactions with gear. Based on this information, Alternative 1/No Action may provide some benefit to protected species relative to Alternative 2.

6.4.1.2 Alternative 2 – Revised Specifications

Based on the most recent scientific data, Alternative 2 would adopt new specifications for groundfish stocks for FY2020 - FY2022 (Table 5, see draft alternatives, dated Nov. 25, 2019). This measure includes the identification of ACLs, ABCs, and OFLs as required by the M-S Act and as implemented by Amendment 16, as well as adjustments to state and sub-ACL sub-components, and new U.S./Canada TACs. In general, relative to Option 1, the new specifications adopted under Option 2 will result in 11 of the stocks (8 allocated and 3 non-allocated) experiencing a decrease in the total ACL, 8 stocks (7 allocated and 1 non-allocated) experiencing some increase in the total ACL, and 1 stock (non-allocated) experiencing no change in ACL (Table 1 and Table 2, see Economic Impacts section).

Annual catch limits can be considered a proxy for relative fishing effort. Information on fishing effort in turn informs potential interaction risks to protected species. Specifically, interaction risks to protected species are associated with the amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, (i.e., components of fishing effort); however, this information is often unavailable. As a result, assessments of protected species interaction with an associated fishery are often dependent on looking at changes (if any) in ACL as a means to identify potential changes in fishing behavior/effort from one year to the next, and therefore, identification of new or additional interaction risks to a protected species. As Alternative 2 will result in an increase in the ACL for multiple stocks, some increase in effort is possible under Alternative 2, relative to Alternative 1. However, any potential increase in effort is expected to be tempered by constraining stocks that are spread out across broadstock areas (see **Section XX**). Based on this, and the fact that the proposed specifications under Alternative 2 are no greater than or are within the range of the specifications that have been authorized by the fishery over the last 5 or more years, resultant fishing

behavior and effort in the groundfish fishery is expected to remain similar to what has been observed in the fishery over this timeframe. Specifically, the number of bottom trawls and gillnets, tow or soak times, and areas fished are not expected change significantly from current operating conditions. As noted above, interaction risks with protected species are strongly associated with amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all these factors. As Alternative 2 is not expected to change any of these operating conditions, and is not expected to result in significant changes in effort, increased interaction risks with protected species are not expected. Based on this, and the fact that the groundfish fishery must comply with the take reduction plans (i.e., HPTRP, the BDTRP, ALWTRP; see **Section XX**: Affected Environment), impacts of Alternative 2 on protected species are expected to be similar to those provided in Alternative 1/No Action, low negative. Relative to Alternative 1/No Action, Alternative 2 is likely to result in neutral to slightly more negative impacts to protected species as there is the potential for a slight increase in effort relative to Alternative 1.

6.4.1.2.1 Option A – Recreational Fishery Georges Bank Cod Catch Target

Option A1: No Action

This catch target for GB cod informs the development of recreational fishery management measures, and is intended to prevent the catch limit on the stock from being exceeded. Under Option A1/No Action, the recreational catch target for GB cod would remain in place for FY 2020. However, the catch target would not continue after FY 2020. Option A1/No Action is expected to have neutral protected species impacts, when compared to Option A2. Option A1/No Action is not expected to result in any significant changes in fishing behavior or effort relative to current operating conditions. As fishing behavior and effort are not expected to change significantly from status quo conditions, the presence, quantity, or degree of recreational gear (e.g., hook and line) used in the groundfish broadstock area are also not expected to change significantly. As provided above, interaction risks with protected species are strongly associated with amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all of these factors. Continuation of “status quo” fishing behavior/effort is not expected to change any of these operating conditions and therefore, relative to current conditions, new or elevated (e.g., more gear) interaction risks to protected species (MMPA protected and ESA listed) are not expected. For these, and the reasons provided in **Section XX**: Affected Environment for MMPA protected (non-ESA listed) and ESA listed species, we expect impacts of A1 on protected species to be neutral to low negative. Further, recreational fishery interaction with protected species is minimal, and therefore the impact of the recreational fishery on protected species is expected to be negligible.

Option A2: Recreational fishery GB cod catch target

Under Option A2, the recreational catch target for GB cod would be extended from FY 2020 – FY 2022. The catch target is needed to ensure that management measures are established so that fishing mortality is controlled in the recreational fishery for GB cod. Based on this, Option A2 will provide no incentive for effort to increase in the recreational fishery and in fact, effort is not expected to be any greater than that under Option A1/No Action. Based on this, overall impacts to protected species are expected to be similar to those provided above for Option A1, neutral to low negative; for rationale to support this determination see Option A1. Relative to Option A1, Option A2 will result in neutral impacts to protected species. Further, recreational fishery interaction with protected species is minimal, and therefore the impact of the recreational fishery on protected species is expected to be negligible.

6.4.1.2.2 Option B – Allocation between Commercial and Recreational Fisheries for Gulf of Maine Cod and Gulf of Maine Haddock

Option B1: No Action

The allocation of GOM cod and haddock between the recreational and commercial fisheries informs the development of management measures to achieve catch targets and determines accountability should targets be exceeded. Under Option B1/No Action, the recreational allocations are 33.7% and 27.5% for GOM cod and GOM haddock, respectively. The allocation of available catch of these stock to different components of the fishery is administrative, but does have indirect impacts on protected species, as otherwise catch would only be limited by the ACL. Compared to Option B2, Option B1/No Action may have some indirect negative impacts, as Option B2 may reduce impacts on protected species, since recreational fishery interaction with protected species is minimal.

Option B2: Revise the allocation between commercial and recreational fisheries for GOM cod and GOM haddock.

This option would revise the allocation of available catch of GOM cod and GOM haddock to different components of the fishery (commercial and recreational). It is administrative, and would not, in and of itself, have a direct impact on protected species. Under Option B2, the recreational allocation for GOM cod and GOM haddock would increase to 37.5% and 33.9%, respectively. Since recreational fishery interaction with protected species is minimal, this option may reduce impacts on protected species, and may have indirect positive impacts compared to Option B1, if an increase in effort by the commercial fishery would otherwise have taken place and would have been realized in gears/times/areas where there is potential for protected species interactions. The ultimate impact of this administrative measure, however, will depend on what management measures are adopted and how fishing effort responds.

6.4.1.2.3 Option C – Closed Area I Hook Gear Haddock Special Access Program

Option C1: No Action

Under Option C1/No Action, the current CAI HGH SAP allocation would remain for GB cod. Maintaining the current allocation is not expected to have direct or indirect impacts, positive or negative, on protected species because it is not expected to change fishing activity and therefore should not affect the impact of the fishery on protected species.

Option C2: Revise the GB cod Incidental Catch TAC to remove the allocation for the Closed Area I Hook Gear Haddock SAP (CAI HGH SAP).

Under Option C2, the current CAI HGH SAP allocation would be removed for GB cod. This is an administrative measure as a follow-up to OHA2. Changing the allocation is not expected to have direct or indirect impacts, positive or negative, on protected species because it is not expected to change fishing activity and therefore should not affect the impact of the fishery on protected species.

6.4.1.2.4 Option D – Midwater Trawl Atlantic Herring Fishery sub-ACL for Georges Bank Haddock

Option D1: No Action

Option D would address the sub-ACL for GB haddock in the mid-water trawl Atlantic herring fishery. Under Option D1/No Action, the GB haddock sub-ACL in the mid-water trawl Atlantic herring fishery

would continue to be set at 1.5% of the US ABC. Option D1/No Action will not provide any incentive to increase effort or change groundfish fishing behavior in a manner that differs from how the fishery currently operates. Similarly, this option is not expected to provide any incentive to the Atlantic herring fishery to increase effort; its purpose, as noted above, is for accountability. Based on this, Option D1/No Action is likely to result in low negative to neutral impacts to protected species. Relative to Option D2, Option D1/No Action is expected to have neutral impacts to protected species; for additional information to support this determination, see Option D2.

Option D2: Increase the MWT Atlantic herring fishery sub-ACL for GB haddock to 2 percent

Option D2 would increase the sub-ACL from 1.5% of the US ABC to 2% of the US ABC. The intent of Option D2 is to incentivize the midwater trawl fleet to minimize the incidental catch of GB haddock while providing the opportunity for the fleet to fully harvest its herring sub-ACL for Herring Management Areas 1B and 3. Specifically, if catch caps for GB haddock are attained in the herring mid-water trawl fishery, resultant AMs are triggered, causing effort in the herring fishery to be constrained. Therefore, Option D2 aims to reduce the potential for negative impacts on the herring fishery (caused by reductions in fishing opportunities in Areas 1B and 3).

Option D2 does not provide any incentive to increase effort or change groundfish fishing behavior in a manner that differs from how the fishery currently operates. With effort in the groundfish fishery not expected to increase or change relative to current operating condition, gear quantity, soak/tow time, and areas fished are also not expected to change relative to current operating conditions. As interactions risks with protected species are strongly associated with amount, time, and location of gear in the water, and fishing behavior/effort (e.g., gear quantity, soak/tow time, area fished) in the groundfish fishery is not expected to change from current operating conditions, new risks or additional takes to protected species that have not already been considered and/or authorized by NMFS to date are not expected (NMFS 2013; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016). As a result, changes in impacts (i.e., low negative) to protected species from those provided in Option D1/No Action are not expected.

Option D2 is also not expected to provide any incentive to increase effort in the herring fishery; however, depending on whether the AM is triggered, shifts in effort are possible. It is difficult to determine how this shift in effort could potentially affect protected species; however, as any shift in effort would be to areas which have been considered by NMFS in its assessment of fishery effects to protected species (NMFS 2012a, b; 2013; 2014a, b; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016), and overall effort in the herring fishery, relative to current operating conditions, is not expected to be affected by this option, new risks or additional interactions with protected species that have not already been considered and/or authorized by NMFS to date are not expected (NMFS 2012a, b; 2013; 2014a, b; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016). In fact, similar to the rationale provided in Option 1/No Action for non-listed marine mammal species, although the available information on non-ESA listed marine mammal interactions with commercial fishing gear is a collective representation, and does not address the effects of the Atlantic Herring FMP specifically, the information does demonstrate that, to date, operation of the Atlantic Herring FMP, or any other fishery, has not resulted in a collective level of take that threatens the continued existence of non-ESA listed marine mammal populations (Waring et al. 2014; Waring et al. 2015; Waring et al. 2016). Based on this information, and the fact that voluntary measures exist that reduce serious injury and mortality to marine mammal species incidentally caught in trawl fisheries (see the Atlantic Trawl Gear Take Reduction Team), it is expected that under Option D2, which will not significantly change current operating conditions in the herring fishery, there will be no new risks or additional takes to non-listed marine mammals that have not already been considered and/or authorized by NMFS to date. As a result, Option D2 is not expected to threaten the continued existence of non-ESA listed species of marine mammals. For these reasons, as well as those provided in previous

assessment of the herring fishery's impact on protected species (NEFMC 2016; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016), we expect impacts to non-listed marine mammals to be low negative to negligible; for additional details see (NEFMC 2016; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016).

In regards to ESA listed species, Option D2 will result in neutral impacts to these species. ESA listed species interactions with the Atlantic herring fishery are rare to non-existent (NMFS 2012a, b; 2013; 2014a, b; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016; NMFS NEFSC FSB 2015, 2016). As Option D2 will result minimal change to current operating conditions, changes in fishing effort or behavior above and beyond that which has been characteristic of the fishery is not expected. As interactions with ESA listed species have been rare to non-existent in this fishery, Option D2 is not expected to introduce any new risks (e.g., changes in gear quantity, increases in tow time) to ESA listed species that have not already been considered by NMFS and deemed "not likely to adversely affect" these species (NMFS 2012a, b; 2013; 2014a, b). In fact, NMFS recently concluded that the Atlantic Herring FMP will not adversely affect or jeopardize the continued existence of any ESA listed species (NMFS 2014a,b). Based on this, as well as previous assessments done for the herring fishery and its impacts on ESA listed species (NMFS 2012a, b; 2013; 2014a, b; NEFMC 2016; Waring et al. 2014; Waring et al. 2015; Waring et al. 2016) the effects of sub-option 2 on ESA listed species are expected to be neutral.

Option D2 is likely to result in low negative to neutral impacts to protected species. Also, Option D2 does not introduce any additional positive or negative impacts. As a result, relative to Option D1/No Action, Option D2 would result in neutral impacts to protected species.

6.4.1.2.5 Option E – Atlantic Sea Scallop Fishery sub-ACL for Southern New England/Mid-Atlantic Yellowtail Flounder

Option E1: No Action

Besides the groundfish fishery, the scallop fishery is a contributor to SNE/MA yellowtail flounder catches. By allocating a sub-ACL for the scallop fishery, the scallop fishery can be held accountable for its catch of SNE/MA yellowtail flounder, while at the same time, allowing the groundfish fishery to continue to operate without constraints imposed on the fishery as a result of another fishery triggering the AM. Under Option E1/No Action, there would be no changes to the scallop fishery sub-ACL for SNE/MA yellowtail flounder for FY2020. The scallop fishery sub-ACL for SNE/MA yellowtail flounder would be 16 mt, the value specified in FW 57. Beyond FY2020, no scallop fishery sub-ACL would be specified for SNE/MA yellowtail flounder. Option E1/No Action will not provide any incentive to increase effort or change groundfish fishing behavior in a manner that differs from how the fishery currently operates. Similarly, this option is not expected to provide any incentive to the scallop fishery to target SNE/MA yellowtail flounder; its purpose, as noted above, is for accountability.

Based on the above, impacts to protected species are expected to be low negative. As provided in previous sections, interaction risks with protected species are strongly associated with presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all these factors. Fishing behavior/effort (e.g., gear quantity, soak/tow time, area fished) in the groundfish fishery is not expected to change from current operating conditions as result of Option E1/No Action. Similarly, as SNE/MA yellowtail flounder is a non-target (possession prohibited) bycatch species for the scallop fishery, overall effort in the scallop fishery, relative to current operating conditions, is not expected to increase as result of Option E1/No Action. With effort in either fishery not expected to increase or change significantly relative to current operating conditions, gear quantity, tow time, and areas fished are also not expected to change. Based on this, relative to current operating conditions, new or elevated (e.g., more gear, longer tow times) interaction risks to protected species are not expected. Based on this, we expect Option E1/No Action to result in low negative impact to protected species. Relative to Option E2, Option E1/No Action is expected to have neutral to slightly more negative

impacts to protected species as potential constraints on effort in the scallop fishery and thus, potential decreases in interactions, are not likely to be experienced under Option E1/No Action as they may be in Option E2; for additional information to support this determination, see Option E2.

Option E2: Set the Atlantic Sea Scallop Fishery Sub-ACL for SNE/MA yellowtail flounder using 90% of projected scallop fishery catch

Option E2 would continue to specify scallop fishery sub-ACLs for SNE/MA yellowtail flounder based on the scallop fishery's projected catch. Specifically, Option E2 will set the SNE/MA yellowtail flounder scallop fishery sub-ACL at 90% of the scallop fishery's estimated catch for FY2020 - FY2022.

Based on the above, Option E2 will not provide any incentive to increase effort or change groundfish fishing behavior in a manner that differs from how the fishery currently operates. Similarly, as SNE/MA yellowtail flounder is a non-target (possession prohibited) bycatch species for the scallop fishery, overall effort in the scallop fishery, relative to current operating conditions, is not expected to increase as a result of Option E2. However, Option E2 results in a lower sub-ACL for SNE/MA yellowtail flounder, and fishing activity by the scallop fishery may be constrained, and thus, effort may decrease with the lower scallop sub-ACL proposed for SNE/MA yellowtail (2mt); however, this depends on which areas the scallop fishery is operating in. This however is unlikely with a low projected scallop fishery catch of SNE/MA yellowtail flounder for FY2020 (2mt) expected, and so depending on the accuracy of this estimate, the scallop fishery may not be impacted greatly by the FY2020 sub-ACL.

Based on the above, impacts to protected species are expected to be low negative. As provided in previous sections, interaction risks with protected species are strongly associated with the amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all of these factors. Fishing behavior/effort (e.g., gear quantity, soak/tow time, area fished) in the groundfish fishery is not expected to change from current operating conditions as result of Option E2. Similarly, overall effort in the scallop fishery, relative to current operating conditions, is not expected to increase as result of Option E2. With effort in either fishery not expected to increase or change significantly relative to current operating conditions, gear quantity, tow time, and areas fished are also not expected to change. Based on this, relative to current operating conditions, new or elevated (e.g., more gear, longer tow times) interactions risks to protected species are not expected. As a result, we expect impacts to protected species to be low negative. Due to the potential for effort to be constrained under Option E2, relative to Option E1/No Action, Option E2 is expected to result in neutral to low positive impacts to protected species. However, in recent years, the sub-ACL of 90% of the scallop fishery's projected catch has allowed for full utilization of the scallop resource. Therefore, although the sub-ACL under Option E2 is lower than that under Option E1/No Action, effort and, therefore, impacts to protected species from interactions with the scallop fishery should be similar regardless of the option.

6.4.2 Action 2 – Recreational Fishery Measures for Georges Bank Cod

6.4.2.1 Alternative 1 – No Action

Under Alternative 1/No Action, the Regional Administrator would not have the temporary authority to adjust recreational management measures for GB cod. The GB cod management measures that are currently in place for the recreational fishery would remain, and Council action would be needed to adjust the management measures. As a result, Alternative 1/No Action is not expected to result in any significant changes in fishing behavior or effort relative to current operating conditions. As fishing behavior and effort are not expected to change significantly from status quo conditions, the presence, quantity, or degree of recreational gear (e.g., hook and line) used in the groundfish broadstock area are also not

expected to change significantly. As provided above, interaction risks with protected species are strongly associated with amount of gear in the water, the time the gear is in the water (e.g., soak time, tow time), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases of any or all of these factors. Continuation of “status quo” fishing behavior/effort is not expected to change any of these operating conditions and therefore, relative to current conditions, new or elevated (e.g., more gear) interaction risks to protected species (MMPA protected and ESA listed) are not expected. For these, and the reasons provided in **Section XX: Affected Environment** for MMPA protected (non-ESA listed) and ESA listed species, we expect impacts of Alternative 1/No Action on protected species to be neutral to low negative. Further, recreational fishery interaction with protected species is minimal, and therefore the impact of the recreational fishery on protected species is expected to be negligible.

6.4.2.2 Alternative 2 – Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod

Alternative 2 would grant the Regional Administrator with temporary authority to adjust the recreational management measures for GB cod without requiring action by the Council. Alternative 2 would allow for the recreational management measures for GB cod to be adjusted in FY2020 by the Regional Administrator to stay below a catch target of 138mt. Based on this, Alternative 2 will provide no incentive for effort to increase in the recreational fishery and in fact, effort is not expected to be any greater than that under Alternative 1/No Action. Based on this, overall impacts to protected species are expected to be similar to those provided above for Alternative 1, neutral to low negative; for rationale to support this determination see Alternative 1/No Action, Section 6.4.2.1. Relative to Alternative 1/No Action, Alternative 2 will result in neutral impacts to protected species. Further, recreational fishery interaction with protected species is minimal, and therefore the impact of the recreational fishery on protected species is expected to be negligible.

6.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

6.5 IMPACTS ON HUMAN COMMUNITIES- ECONOMICS

Introduction

Consideration of the economic impacts of the changes made in this framework is required pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1976. NEPA requires that before any federal agency may take “actions significantly affecting the quality of the human environment,” that agency must prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) that includes the integrated use of the social sciences (NEPA Section 102(2) (C)). The MSA stipulates that the social and economic impacts to all fishery stakeholders should be analyzed for each proposed fishery management measure to provide advice to the Council when making regulatory decisions (Magnuson-Stevens Section 1010627, 109-47).

The National Marine Fisheries Service (NMFS) provides guidelines to use when performing economic reviews of regulatory actions. The key dimensions for this analysis are expected changes in net benefits to fishery stakeholders, the distribution of benefits and costs within the industry, and changes in income and employment (NMFS 2007). Where possible, cumulative effects of regulations are identified and discussed. Non-economic social concerns are discussed in Section 6.6. The economic impacts presented here consist of both qualitative and quantitative analyses dependent on available data, resources, and the measurability of predicted outcomes. It is assumed throughout this analysis that changes in revenues would have downstream impacts on income levels and employment; however, these are only mentioned if directly quantifiable.

6.5.1 Action 1 – Specifications

[Placeholder/to be provided: Quota Change Model results].

6.5.1.1 Alternative 1 - No Action

Default specifications would be in effect from May 1, 2020, to July 31, 2020, and would equal 35% of the FY2019 catch limits, which would be necessary for Eastern GB cod and Eastern GB haddock and would use FY2019 catch limits as a basis for also adjusting GB cod and GB haddock for expected Canadian catches. All other stocks have FY2020 specifications adopted in FW57 and FW58. There would be no new FY2020 quotas specified for the transboundary Georges Bank stocks (i.e. GB cod, GB haddock, GB yellowtail flounder), which are managed through the US/CA Resource Sharing Understanding. These quotas are specified annually.

Impacts on the groundfish fishery

Alternative 1/No Action would have negative impacts to the commercial groundfish fishery relative to FY 2019. Groundfish vessels would only have three months (May, June, and July) to operate in the EGB management area in FY2019 before default ACLs for EGB cod and EGB haddock would expire.

Impacts on the sector component of the commercial groundfish fishery

Option 1/No Action would have negative impacts to the commercial groundfish fishery relative to FY 2019, following closed access after July 31, 2020 to stocks caught in the EGB management area.

Impacts on the common pool component of the commercial groundfish fishery

Alternative 1/No Action would have neutral impacts on the common pool fishery relative to FY 2019 and uncertain to positive impacts relative to Alternative 2, depending on the sub-options selected. Under No Action, the common pool sub-ACL for SNE yellowtail flounder would be 6mt. Under sub-option E1, the sub-ACL would be 0mt, resulting in negative impact to the common pool. Under sub-option E2, the sub-ACL would be 3mt, and the impacts on the common pool would be uncertain.

Impacts on the recreational groundfish fishery

Alternative 1/No Action would have neutral impacts relative to FY2019 (no change from the 220 mt quota) and positive impacts for the recreational groundfish fishery relative to Alternative 2 since the FY2020 sub-ACL for GOM cod (a constraining stock) is greater than either of the sub-ACLs under Option B1 or Option B2 (220 mt under Alternative 1/No Action, and 173 mt or 193 mt under Option B1 or B2, respectively). The recreational sub-ACL for GOM haddock would increase under either Option B1 or B2 but access to this stock is limited by incidental catch of GOM cod so the impact of this increase is expected to be neutral.

Impacts on other fisheries

Atlantic Sea Scallop Fishery

Under Alternative 1/No Action, the following sub-ACLs would be allocated to the scallop fishery during FY2020: 25mt of GB yellowtail flounder, 16mt of SNE/MA yellowtail flounder, 158mt of SNE/MA windowpane flounder, and 18mt of GOM/GB windowpane flounder. Under Alternative 1/No Action, the FY2020 sub-ACL adjustment for GB yellowtail would be +8mt and the adjustment for SNE/MA yellowtail would be +1 mt from FY2019 levels. Accordingly, Alternative 1/No Action would have low positive impacts to the scallop fishery relative to FY2019. The sub-ACLs for SNE/MA windowpane flounder and GOM/GB windowpane flounder would be unchanged from FY2019. Relative to Alternative 2, Alternative 1/No Action is expected to have low negative impacts since GB yellowtail flounder would decrease from 25 mt to 19 mt, SNE/MA yellowtail flounder would decrease to 2 mt in FY2020 and also in FY2021 and FY2022 under Option E2 or the sub-ACL could not be specified in FY2021 and FY2022 under Option E1. In addition, sub-ACLs for both windowpane stocks would decrease under Alternative 2; northern windowpane flounder would decrease by 6 mt and southern windowpane flounder would decrease by 15 mt.

Midwater trawl directed Atlantic herring fishery

Alternative 1/No Action would have neutral to low positive impacts for the midwater trawl herring fishery. Sub-ACLs for GB haddock and GOM haddock between FY2019 and FY2020 would increase from 811 mt to 1,020mt for GB haddock and decrease from 116 mt to 95 mt for GOM haddock. However, GB haddock catches by the herring fishery have been low in recent years— less than 50 mt in FY2017 and FY2018, due to lower herring ACLs. If trends continue, increases in the GB haddock sub-ACL are unlikely to confer positive economic benefits in FY2020 and beyond. In FY2017 and FY2018 there have not been recorded catch or discards of GOM haddock by the midwater trawl herring fishery, so unless effort shifts considerably, neutral economic impacts would be expected.

Small-mesh fisheries

Under Alternative 1/No Action the sub-ACL for GB yellowtail flounder for the small mesh fisheries (e.g., whiting and squid) would increase slightly from 2 mt in FY2019 to 3 mt FY2020, but decrease for FY2020 from 3 mt to 2 mt under Alternative 2 which would have neutral economic impacts on the small-mesh fishery since catches in recent years have been low (less than 1 mt in FY2017 and FY2018). If effort remains similar as it has in the most recent fishing years it is unlikely that this change in the sub-ACL will be constraining for the fishery. According to the FY2018 monitoring report for the small-mesh

multispecies fishery, effort has decreased in the fishery since 2012 and the number of vessels in the fishery hit a historical low in 2018.

Large-mesh non-groundfish fisheries

The southern windowpane flounder “other fisheries” sub-component is used to evaluate when an AM could be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl fisheries). Under Alternative 1/No Action, the other sub-component would remain unchanged at 218 mt in FY2019 to FY2020. Impacts are expected to be neutral.

6.5.1.2 Alternative 2 – Revised Specifications

Impacts on the groundfish fishery

Changes in the commercial groundfish sub-ACL from FY2019 to FY2020, under Alternative 2/Revised Specifications with all the action items (Options A2, B2, D2, and E2) selected are summarized in Table 1. The largest increases in quota (in percentage terms) would be for American plaice (79%), CC/GOM yellowtail flounder (73%), and witch flounder (53%). The largest decreases in quota, among allocated stocks, would be for pollock (63%), SNE/MA yellowtail Flounder (53%), and GB winter flounder (33%). The Quota Change Model (QCM) will analyze changes in sector revenue only; the vast majority of groundfish revenue is associated with sector vessels. The QCM was run under Alternative 1/No Action and compared with Alternative 2, assuming all action items were selected by the Council. Due to time constraints, these results will be provided at the Council meeting.

Impacts on the sector component of the commercial groundfish fishery

In the absence of QCM results, some recent fishery trends over FY2016-FY2018 are presented. Table 3 shows utilization rates for allocated groundfish stocks, and Table 4 shows catch and ex-vessel price by stock. The highest utilization rates in FY2018 were for stocks of GOM cod, witch flounder, and white hake. GB cod, American plaice, and SNE/MA winter flounder stocks have also had high utilization rates in recent years, though rates have declined from FY2016 to FY2018. Among the highest utilization stocks in FY2018, there would be an increase in the commercial groundfish sub-ACL for witch flounder and American plaice in FY2020 relative to FY2019 under Alternative 2, a decrease for GB cod, GOM cod, and white hake, and a similar sub-ACL for SNE/MA winter flounder. White hake catches were greater than the proposed FY2020 sub-ACL during both FY2017 and FY2018. GOM cod catches were greater than the proposed FY2020 sub-ACL during FY2018. Six groundfish stocks (GB cod west, GOM haddock, white hake, pollock, redfish, witch flounder) exhibited landings increases throughout the 3-year period (from FY2016 to FY2017 and again from FY2017 to FY2018), while three stocks (SNE/MA winter flounder, CC/GOM yellowtail flounder, SNE/MA yellowtail flounder) exhibited landings decreases. Aggregated across all stocks, there was a fairly substantial increase (+31%) in groundfish landings across the three-year period, though gross revenue increases largely did not materialize in the fishery due to decreases in price (-27%). Ex-vessel prices decreased for every groundfish stock (other than Eastern GB cod) from FY2016 to FY2017 and again from FY2017 to FY2018. These price decreases were likely the product of multiple factors including, but not limited to: increased landings for some stocks, changes in the distribution of market category landings for some stocks, and product substitution among dealers, which may be driven by a lack of steady local supply for some stocks. A decrease in consumer demand in the Northeast region and/or on a larger scale is also a possibility.

Groundfish revenue and total revenue derived from groundfish trips in the Gulf of Maine and Georges Bank during FY2016-FY2018 is presented in Table 5, and Table 6 shows the distribution of revenue by port. Groundfish revenue derived from catch in the Gulf of Maine exceeded revenue derived from Georges Bank catch for FY2016-FY2018, while average total revenue from groundfish trips was similar between the areas. Nearly half of groundfish ex-vessel revenue derived from Georges Bank groundfish landings was from vessels landing in New Bedford. Vessels landing in Boston, Gloucester, and Portland

generated significantly more revenue from Gulf of Maine groundfish catch than Georges Bank groundfish catch. The QCM results will inform how ex-vessel revenue in these major groundfish ports may be impacted by the FY2020 quotas. Given that GOM cod and white hake are two of the stocks that had high FY2018 utilization rates that are also facing decreased sub-ACLs, and the vast majority of white hake is caught in the GOM, FY2020 quotas may be more of a fishing constraint in the Gulf of Maine than in recent years.¹ Fishing on Georges Bank may also be constrained by lower quotas for cod and winter flounder.

Impacts on the common pool component of the commercial groundfish fishery

Relative to No Action, Alternative 2 could have neutral to strongly negative impacts on the common pool fishery, depending on what is selected under Option E. Regardless, the non-sector sub-ACL for SNE/MA yellowtail flounder will decrease from FY2019 levels of 6 mt to either 0 mt (Option E1) or 3 mt (Option E2), following the choice of allocation to the sea scallop fishery.

Impacts on the recreational groundfish fishery

The recreational groundfish fishery would see a mix of changes to sub-ACL values. While GOM Cod will have a reduction of 12%, GOM Haddock will see an increase of 14% from FY2019 to FY2020 (Table 2). However, because the GOM cod sub-ACL constrains catches of GOM haddock, Alternative 2 is expected to have neutral to negative economic impacts relative to the Alternative 1/No Action, to the extent that the reduction in the GOM cod sub-ACL leads to management measures which will reduce effort, revenue, or private angler benefits in the recreational fishery.

Impacts on other fisheries

Atlantic Sea Scallop Fishery

Alternative 2 is expected to have low negative or neutral economic impacts on the sea scallop fishery (Table 2). Although, the sub-ACL reductions between FY2019 and FY2020 from 15 mt to 2mt would be 87% lower, the sub-ACL for SNE/MA yellowtail flounder is based on projected bycatch in the sea scallop fishery. Additionally, the GB yellowtail flounder sub-ACL would increase from 17 mt in FY2019 to 19 mt in FY2020. Moreover, both windowpane flounder stocks will also see moderate reductions in their sub-ACL values for the sea scallop fishery.

Midwater trawl directed Atlantic herring fishery

The midwater trawl herring fishery will have mixed changes in sub-ACL values (Table 2). Under Alternative 2, while GB haddock is proposed to increase by 72% between FY2019 and FY2020, GOM haddock would be reduced by 8%. Impacts are expected to be neutral given recent low catches of both haddock stocks.

Small mesh fisheries

Under Alternative 2, there will be no change in GB yellowtail flounder for small-mesh fisheries from FY2019 to FY2020 (Table 2). Impacts are expected to be neutral given recent low catches of GB yellowtail flounder.

Large-mesh non-groundfish fisheries

The southern windowpane flounder “other fisheries” sub-component is used to evaluate when an AM could be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl

¹ There is also evidence that unaccounted for cod catch has been occurring in recent years ([SSC Sub-Panel Review of A23 Groundfish Monitoring Analyses, April 2019](#)). Given the existence of unaccounted for catch, combined with increased observer coverage, fishery effort in the GOM may look quite different in FY2020.

fisheries). Under Alternative 2, the other sub-component would reduce from 218 mt in FY2019 to 196 mt in FY2020, a decrease of 10%. Impacts are expected to be low negative.

Table 1 - Comparison of commercial (sector and common pool) groundfish sub-ACLs (mt) for FY2019 and proposed FY2020, including the percent change between years. Proposed FY2020 sub-ACLs as indicated under Alternative 2/Revised Specifications and Options A2, B2, D2, and E2.

Commercial groundfish sub-ACL

| Stock | | FY2019 (adjusted for FY2017 overages*) | Proposed FY2020 | % Change |
|-------------------------|----------------------------|---|----------------------------|---------------------|
| Allocated Stocks | GB Cod | 1,568 | 1,081 | -31% |
| | GOM Cod* | 360 | 275 | -24% |
| | GB Haddock | 53,276 | 69,521 | +30% |
| | GOM Haddock | 8,312 | 7,020 | -16% |
| | GB Yellowtail Flounder | 85 | 95 | +12% |
| | SNE/MA Yellowtail Flounder | 32 | 15 | -53% |
| | CC/GOM Yellowtail Flounder | 398 | 688 | +73% |
| | American Plaice | 1,467 | 2,630 | +79% |
| | Witch Flounder | 854 | 1,310 | +53% |
| | GB Winter Flounder | 774 | 522 | -33% |
| | GOM Winter Flounder | 355 | 287 | -19% |
| | SNE/MA Winter Flounder | 518 | 539 | +4% |
| | Redfish | 10,972 | 11,231 | +2% |
| | White Hake | 2,735 | 2,019 | -26% |
| | Pollock | 37,400 | 13,895 | -63% |
| Non-allocated Stocks | GOM/GB Windowpane Flounder | 63 | 38 | -40% |
| | SNE/MA Windowpane Flounder | 53 | 48 | -9% |
| | Ocean Pout | 94 | 92 | -2% |
| | Atlantic Halibut | 75 | 77 | +3% |
| | Atlantic Wolffish | 82 | 82 | 0% |

Table 2 Comparison of other fisheries sub-ACLs (mt) for FY2019 and proposed FY2020, including the percent change between years. Proposed FY2020 sub-ACLs as indicated under Alternative 2/Revised Specifications and Options A2, B2, D2, and E2.

| Fishery | Stock | FY2019 sub-ACL | Proposed FY2020 | % Change |
|----------------------------------|----------------------------|----------------|-----------------|----------|
| Recreational Groundfish | GOM Cod | 220 | 193 | -12% |
| | GOM Haddock | 3,194 | 3,634 | +14% |
| Sea Scallop | GB Yellowtail Flounder | 17 | 19 | +12% |
| | SNE/MA Yellowtail Flounder | 15 | 2 | -87% |
| | GOM/GB Windowpane Flounder | 18 | 12 | -33% |
| | SNE/MA Windowpane Flounder | 158 | 143 | -9% |
| Midwater Trawl | GB Haddock | 811 | 1,396 | +72% |
| | GOM Haddock | 116 | 107 | -8% |
| Small-Mesh | GB Yellowtail Flounder | 2 | 2 | 0% |
| Other Sub-Component ¹ | SNE/MA Windowpane Flounder | 218 | 196 | -10% |

¹This value is not a sub-ACL. The other sub-component for SNE/MA Windowpane Flounder is used to evaluate AMs for large-mesh non-groundfish trawl fisheries (e.g., summer flounder and scup trawl fisheries).

Table 3. Commercial (sector and common pool) groundfish fishery Utilization rates for allocated groundfish stocks, FY2016-FY2018. Rates >75% are highlighted.

| Stock | FY2016 Utilization | FY2017 Utilization | FY2018 Utilization |
|----------------------------|--------------------|--------------------|--------------------|
| GB Cod East | 60.6 | 30.5 | 42.3 |
| GB Cod | 97.6 | 84.4 | 71.1 |
| GOM Cod | 96 | 96.1 | 86.7 |
| GB Haddock East | 3.6 | 1.4 | 4 |
| GB Haddock | 8.6 | 7.8 | 11.6 |
| GOM Haddock | 65.9 | 75.4 | 32.8 |
| GB Yellowtail Flounder | 9.7 | 19.4 | 14.9 |
| SNE/MA Yellowtail Flounder | 26.3 | 6 | 19.9 |
| CC/GOM Yellowtail Flounder | 76.2 | 60.3 | 43.3 |
| American Plaice | 96.5 | 89.4 | 68.6 |
| Witch Flounder | 97 | 67.8 | 97.9 |

| Stock | FY2016 Utilization | FY2017 Utilization | FY2018 Utilization |
|---------------------|---------------------------|---------------------------|---------------------------|
| GB Winter Flounder | 72.2 | 61.4 | 57.9 |
| GOM Winter Flounder | 18 | 18.3 | 26.7 |
| SNE Winter Flounder | 75.8 | 72.2 | 50.1 |
| Redfish | 43 | 45.9 | 50.1 |
| White Hake | 42.9 | 60.7 | 77.2 |
| Pollock | 16.7 | 16.9 | 9.4 |

Table 4. Stock-level commercial (sector and common pool) landings (thousands of lbs.) and ex-vessel prices (2018 dollars/lb.)

| Stock | Landings | | | | Ex-Vessel Price | | | |
|----------------------------|-----------------|---------------|---------------|---------------|------------------------|---------------|---------------|---------------|
| | 2016 | 2017 | 2018 | Avg. | 2016 | 2017 | 2018 | Avg. |
| GB Cod East | 144 | 78 | 198 | 140 | \$2.61 | \$2.83 | \$2.44 | \$2.57 |
| GB Cod West | 924 | 734 | 1,369 | 1,009 | \$2.81 | \$2.76 | \$2.26 | \$2.55 |
| GOM Cod | 481 | 469 | 575 | 508 | \$3.13 | \$3.04 | \$2.80 | \$2.98 |
| GB Winter Flounder | 929 | 831 | 924 | 895 | \$3.63 | \$3.29 | \$3.26 | \$3.40 |
| GOM Winter Flounder | 234 | 244 | 197 | 225 | \$2.92 | \$2.84 | \$2.67 | \$2.82 |
| SNE Winter Flounder | 978 | 885 | 544 | 802 | \$3.16 | \$3.00 | \$2.77 | \$3.01 |
| GB Haddock East | 847 | 615 | 1,085 | 849 | \$1.33 | \$0.96 | \$0.93 | \$1.07 |
| GB Haddock West | 5,815 | 6,212 | 8,021 | 6,683 | \$1.30 | \$1.01 | \$0.96 | \$1.07 |
| GOM Haddock | 2,902 | 4,179 | 5,399 | 4,160 | \$1.58 | \$1.25 | \$1.15 | \$1.29 |
| Atlantic Halibut | 40 | 49 | 52 | 47 | \$8.61 | \$7.01 | \$6.63 | \$7.33 |
| White Hake | 2,359 | 3,318 | 3,433 | 3,037 | \$1.95 | \$1.37 | \$1.26 | \$1.48 |
| American Plaice | 2,300 | 2,222 | 2,248 | 2,257 | \$2.65 | \$2.50 | \$2.16 | \$2.43 |
| Pollock | 5,674 | 5,771 | 6,580 | 6,008 | \$1.12 | \$0.99 | \$0.82 | \$0.97 |
| Redfish | 8,872 | 10,181 | 11,669 | 10,241 | \$0.62 | \$0.55 | \$0.50 | \$0.55 |
| Witch Flounder | 647 | 986 | 1,660 | 1,097 | \$3.33 | \$2.25 | \$1.67 | \$2.17 |
| CC/GOM Yellowtail Flounder | 537 | 413 | 328 | 426 | \$1.86 | \$1.55 | \$1.16 | \$1.58 |
| GB Yellowtail Flounder | 51 | 68 | 61 | 60 | \$2.29 | \$1.80 | \$1.67 | \$1.90 |
| SNE Yellowtail Flounder | 131 | 29 | 16 | 59 | \$2.65 | \$2.67 | \$2.10 | \$2.60 |
| Total | 33,865 | 37,283 | 44,358 | 38,502 | \$1.52 | \$1.25 | \$1.11 | \$1.27 |

Table 5. Commercial (sector and common pool) groundfish landings and revenue by broadstock area, and total landings and revenue (on groundfish trips) by broadstock area. Landings in thousands of lbs.; revenue in millions of 2018 dollars.

| | Groundfish Landings | | | | Groundfish Revenue | | | |
|---------------|---------------------|--------|--------|--------|--------------------|--------|--------|--------|
| | 2016 | 2017 | 2018 | Avg. | 2016 | 2017 | 2018 | Avg. |
| Georges Bank* | 15,741 | 13,376 | 16,819 | 15,312 | \$25.3 | \$19.2 | \$21.2 | \$21.9 |
| Gulf of Maine | 18,124 | 23,908 | 27,539 | 23,190 | \$26.1 | \$27.5 | \$28.1 | \$27.2 |
| Total | 33,865 | 37,284 | 44,358 | 38,502 | \$51.4 | \$46.7 | \$49.3 | \$49.1 |

| | Total Landings | | | | Total Revenue | | | |
|---------------|----------------|--------|--------|--------|---------------|--------|--------|--------|
| | 2016 | 2017 | 2018 | Avg. | 2016 | 2017 | 2018 | Avg. |
| Georges Bank* | 35,356 | 33,169 | 35,198 | 34,575 | \$41.8 | \$33.1 | \$35.3 | \$36.7 |
| Gulf of Maine | 22,723 | 28,582 | 32,090 | 27,798 | \$34.4 | \$36.1 | \$35.9 | \$35.5 |
| Total | 58,079 | 61,751 | 67,288 | 62,373 | \$76.2 | \$69.2 | \$71.2 | \$72.2 |

*Georges Bank includes Southern New England/Mid Atlantic

Table 6. Groundfish revenue (in millions of 2018 dollars) by major port derived from catch in Georges Bank and the Gulf of Maine.

| Georges Bank* | 2016 | 2017 | 2018 | Avg. | Avg. % of Total |
|----------------------|---------------|---------------|---------------|---------------|------------------------|
| Boston | \$2.7 | \$2.5 | \$2.6 | \$2.6 | 11.9% |
| Gloucester | \$3.3 | \$2.1 | \$2.9 | \$2.8 | 12.6% |
| New Bedford | \$12.4 | \$8.5 | \$9.6 | \$10.2 | 46.5% |
| Portland | \$4.1 | \$3.6 | \$3.6 | \$3.8 | 17.2% |
| Other | \$2.8 | \$2.5 | \$2.4 | \$2.6 | 11.8% |
| Total | \$25.3 | \$19.2 | \$21.2 | \$21.9 | |

| Gulf of Maine | 2016 | 2017 | 2018 | Avg. | Avg. % of Total |
|----------------------|---------------|---------------|---------------|---------------|------------------------|
| Boston | \$5.2 | \$5.5 | \$6.5 | \$5.7 | 21.1% |
| Gloucester | \$7.8 | \$9.6 | \$9.5 | \$8.9 | 32.9% |
| New Bedford | \$1.6 | \$0.8 | \$0.3 | \$0.9 | 3.2% |
| Portland | \$6.7 | \$6.7 | \$6.2 | \$6.5 | 24.0% |
| Other | \$4.8 | \$4.9 | \$5.7 | \$5.1 | 18.8% |
| Total | \$26.1 | \$27.5 | \$28.1 | \$27.2 | |

6.5.1.2.1 Option A – Recreational Fishery Georges Bank Cod Catch Target

Option A1: No Action

Under the No Action alternative, the recreational catch target for Georges Bank cod would remain in place for FY2020. However, the catch target would not continue after FY2020.

Impacts to the commercial groundfish fishery

For FY2020, Option A1/No Action is expected to have negative economic impacts on the commercial fishery, because recalibrated MRIP data will be used to evaluate attainment by the recreational fishery in FY2020, recalibrated estimates in recent fishing years estimate harvest levels 2-3 times higher than previous estimates (Table 7 and Table 8), so the catch target may be exceeded unless management measures are put in place to severely restrict recreational effort, and exceeding the catch target increases the likelihood that the total ACL could be exceeded for the stock. In FY2017 and FY2018, GB cod has been a relatively high-utilization stock ranging from 70-98% utilization between FY2016 and FY2018.

For FY2021 and FY2022, Option A1/No Action is expected to have neutral to negative economic impacts for the commercial groundfish fishery, because a catch target would not be in place, which may increase the risk that the recreational fishery will contribute to exceeding the total ACL for this stock if utilization in the commercial fishery remains high.

Impacts to the recreational groundfish fishery

For FY2020, Option A1/No Action is expected to have negative economic impacts on the recreational fishery because recalibrated MRIP data will be used to evaluate attainment by the recreational fishery in FY2020, recalibrated estimates in recent fishing years estimate harvest levels 2-3 times higher than previous estimates (Table 7 and Table 8), so the catch target may be exceeded unless management measures are put in place to severely restrict recreational effort, which would have negative impacts on the recreational fishery.

For FY2021 and FY2022, the No Action alternative is expected to have neutral to low positive economic impacts for the recreational fishery, because a catch target would not be in place and effort may be relatively unconstrained as compared to under a catch target, depending on how management measures are maintained or adjusted without a catch target in place. Positive economic benefits may only be short term in nature if ACL exceedances occur as a result of the removal of the catch target since long term economic sustainability will be undermined.

Option A2: Recreational fishery GB cod catch target

Under Option A2, the recreational catch target for Georges Bank cod would be extended from FY2020 – FY2022.

Impacts to the commercial groundfish fishery

Across all years (FY2020 to FY2022), Option A2 is expected to have neutral to negative economic impacts on the commercial fishery, relative to Option A1/No Action, because this alternative will retain the previous recreational catch target for GB cod which was based off of the uncalibrated MRIP data. Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years.

Impacts to the recreational groundfish fishery

Across all years, FY2020 to FY2022, Option A2 is expected to have neutral to negative economic impacts on the recreational fishery, relative to No Action, because this alternative will retain the recreational catch target for Georges Bank cod and management measures will attempt to constrain fishing effort within the target which is based on uncalibrated MRIP data, while fishing effort in those years will be calculated using recalibrated estimates. Short term negative economic impacts would be

incurred if management measures are more restrictive under Option 2A compared to Option A1/No Action which may limit recreational fishing revenue and private angler benefits.

Table 7. Recreational Catch Estimates for Georges Bank Cod under previous (old) MRIP methods.
Source: NOAA Fisheries/NEFSC, November 2019.

| | FY 2018 | FY 2018 | FY 2019 |
|--|--------------------------------|----------------------------------|----------------------------------|
| | May 1 - Apr. 30 (All waves) | May 1 - Aug. 30 (Wave's 3, 4) | May 1 - Aug. 30 (Wave's 3, 4) |
| Cod Angler Trips ² | 21,372 | 7,070 | 11,691 (+65%) |
| Cod Catch (numbers, a+b1+b2) | 19,371 | 7,528 | 38,182 (+407%) |
| Cod Kept/Released Dead (numbers, a+b1) | 12,499 | 3,376 | 21,321 (+531%) |
| Cod Released Alive (numbers, b2) | 6,872 | 4,151 | 16,862 (+306%) |
| Cod Removals (numbers, a+b1+(0.30*b2)) | 14,561 | 4,621 | 26,380 (+470%) |
| Cod Removals (weight³, mt) | 37 | | |
| Cod Avg. Catch Per Trip (numbers) | 0.9 | 1.1 | 3.3 (+200%) |

¹Source: Available MRIP data (old currency) as of Nov. 5, 2019

²Number of angler trips that targeted and/or caught cod.

³All weights are based on round weights calculated from MRIP length frequencies and length to weight equations used in the assessments

Table 8. Recreational Catch Estimates for Georges Bank Cod under recalibrated (new) MRIP methods.
Source: NOAA Fisheries/NEFSC, November 2019.

| | FY 2018 | FY 2018 | FY 2019 |
|--|--------------------------------|----------------------------------|----------------------------------|
| | May 1 - Apr. 30 (All waves) | May 1 - Aug. 30 (Wave's 3, 4) | May 1 - Aug. 30 (Wave's 3, 4) |
| Cod Angler Trips ² | 47,343 | 21,156 | 25,985 (+23%) |
| Cod Catch (numbers, a+b1+b2) | 41,073 | 17,582 | 83,382 (+374%) |
| Cod Kept/Released Dead (numbers, a+b1) | 25,277 | 7,573 | 41,644 (+450%) |
| Cod Released Alive (numbers, b2) | 15,796 | 10,008 | 29,976 (+200%) |
| Cod Removals (numbers, a+b1+(0.30*b2)) | 30,016 | 10,575 | 50,637 (+379%) |
| Cod Removals (weight³, mt) | 76 | | |
| Cod Avg. Catch Per Trip (numbers) | 0.9 | 0.8 | 3.2 (+286%) |

¹Source: Available MRIP data (old currency) as of Nov. 5, 2019

²Number of angler trips that targeted and/or caught cod.

³All weights are based on round weights calculated from MRIP length frequencies and length to weight equations used in the assessments.

6.5.1.2.2 Option B – Allocation between Commercial and Recreational Fisheries for Gulf of Maine Cod and Gulf of Maine Haddock

Option B1: No Action

Under Option B1/No Action, the allocation between the commercial and recreational fisheries for GOM cod and haddock would remain unchanged. Data from GARM III was used to determine the proportions following the method described in A16. Under Option B1/No Action, the recreational allocation of GOM

cod would be 33.7% and GOM haddock would be 27.5%. The recreational sub-ACL in FY2019 for GOM cod was 220 mt for GOM haddock was 3,194 mt (Table 2).

Impacts on the commercial groundfish fishery

Economic impacts on the commercial groundfish fishery depend on the likelihood that changes to the commercial allocation may be constraining or increase the likelihood that the ACL may be exceeded and trigger AMs as well as any direct loss in revenue. Maintaining the current allocation under Option B1/No Action could result in positive impacts to the degree that it minimizes the likelihood of commercial overages and triggering the AM on the commercial side, since it results in a higher share of the allocation relative to Option B2, but could be negative in the long-run if it increases the chance the recreational allocation is exceeded. Economic impacts will likely be more pronounced for GOM cod, since this stock has been constraining in recent fishing years, and neutral for GOM haddock since it is not constraining.

Impacts on the recreational groundfish fishery

The economic impacts on the recreational groundfish fishery will depend on the likelihood that recreational catches will trigger accountability measures. In FY2019, management measures changed from no GOM cod possession to a short 2-week season between September 15-30, 2019 with one cod per angler per trip, as well as an increase in the possession limit for GOM haddock. Economic impacts may be neutral to negative for GOM cod, a constraining stock overall, but neutral for GOM haddock since recent ACLs have not been constraining.

Option B2: Revise the allocation between commercial and recreational fisheries for GOM cod and GOM haddock.

Under Option B2, the allocation between commercial and recreational fisheries for Gulf of Maine cod and Gulf of Maine haddock would be updated to reflect the commercial and recreational data in the 2019 stock assessments. Data changes since the initial allocation include updated commercial landings and discards, revised MRIP recreational landings and discards, and changes to recreational discard mortality rates. The time period for calculating the shares would remain unchanged. Under Option B2, the recreational allocation of GOM cod would increase from 33.7% to 37.5% and the recreational allocation of GOM haddock would increase from 27.5% to 33.9%.

Impacts on the commercial groundfish fishery

In recent fishing years, GOM cod has been a constraining stock in the commercial fishery—if no changes occur to the overall ACL, reductions in the commercial subcomponent under Option B2 may have negative impacts relative to Option B1/No Action, since it may increase the likelihood of overages and trigger AMs, as well as lost fishery revenue due to reduced access to a constraining stock. Changes to the GOM haddock allocation is not expected to result in differences that would constrain the fishery and therefore economic impacts are likely neutral.

Impacts on the recreational groundfish fishery

Under Option B2, increasing the recreational fishery allocation of GOM cod and GOM haddock likely would have neutral to positive economic impacts relative to Option B1/No Action. Beginning in FY 2020, calibrated MRIP data (used in the 2019 stock assessments) will be used the basis for catch estimates and fishery catch accounting, so updating allocations based on the entire recalibrated time series may reduce the likelihood that overages will occur (Table 9 and Table 10). Impacts may be attenuated if management measures can effectively control effort in a given fishing year. Economic impacts may be neutral to negative for GOM cod, a constraining stock overall, but neutral for GOM haddock since recent ACLs have not been constraining.

Table 9. Recreational Catch Estimates for Gulf of Maine Cod and Haddock under the previous (old) MRIP methods. Source: NOAA Fisheries/NEFSC, November 2019.

| | FY 2018 | FY 2018 | FY 2019 |
|---|--------------------------------|----------------------------------|----------------------------------|
| | May 1 - Apr. 30 (All waves) | May 1 - Aug. 30 (Wave's 3, 4) | May 1 - Aug. 30 (Wave's 3, 4) |
| Cod/haddock Angler Trips ² | 121,447 | 107,268 | 79,839 (-26%) |
| Cod Catch (numbers, a+b1+b2) | 467,435 | 455,854 | 193,343 (-58%) |
| Cod Kept/Released Dead (numbers, a+b1) | 2,085 | 2,046 | 6,777 (+70%) |
| Cod Released Alive (numbers, b2) | 465,350 | 453,807 | 186,566 (-59%) |
| Cod Removals (numbers, a+b1+(0.15*b2)) | 71,888 | 70,117 | 34,762 (-50%) |
| Cod Removals (weight³, mt) | 147 | 144 | 48 (-67%) |
| Cod Avg. Catch Per Trip (numbers) | 3.8 | 4.2 | 2.4 (-43%) |
| Haddock Catch (numbers, a+b1+b2) | 1,053,632 | 967,023 | 545,236 (-44%) |
| Haddock Kept (numbers, a+b1) | 472,179 | 438,133 | 270,660 (-38%) |
| Haddock Released (numbers, b2) | 581,453 | 528,890 | 274,576 (-48%) |
| Haddock Removals (numbers, a+b1+(b2*season/size release mortality)) | 754,765 | 699,405 | 429,310 (-39%) |
| Haddock Removals (weight³, mt) | 595 | 572 | 332 (-42%) |
| Haddock Avg. Catch Per Trip (numbers) | 8.7 | 9.0 | 6.8 (-24%) |

¹Source: Available MRIP data (old currency) as of Nov. 5, 2019

²Number of angler trips that targeted and/or caught cod or haddock

³All weights are based on round weights calculated from MRIP length frequencies and length to weight equations used in the assessments.

Table 10. Recreational Catch Estimates for Gulf of Maine Cod and Haddock under the recalibrated (new) MRIP methods. Source: NOAA Fisheries/NEFSC, November 2019.

| | FY 2018 | FY 2018 | FY 2019 |
|---|--------------------------------|----------------------------------|----------------------------------|
| | May 1 - Apr. 30 (All waves) | May 1 - Aug. 30 (Wave's 3, 4) | May 1 - Aug. 30 (Wave's 3, 4) |
| Cod/haddock Angler Trips ² | 289,013 | 203,435 | 149,798 (-26%) |
| Cod Catch (numbers, a+b1+b2) | 1,175,233 | 1,148,919 | 381,458 (-67%) |
| Cod Kept/Released Dead (numbers, a+b1) | 5,368 | 5,329 | 10,541 (+49%) |
| Cod Released Alive (numbers, b2) | 1,169,865 | 1,143,590 | 370,917 (-68%) |
| Cod Removals (numbers, a+b1+(0.15*b2)) | 180,848 | 176,868 | 66,179 (-50%) |
| Cod Removals (weight³, mt) | 382 | 374 | 87 (-77%) |
| Cod Avg. Catch Per Trip (numbers) | 4.1 | 5.6 | 2.5 (-43%) |
| Haddock Catch (numbers, a+b1+b2) | 2,255,068 | 1,806,365 | 1,010,958 (-44%) |
| Haddock Kept (numbers, a+b1) | 1,153,311 | 807,082 | 483,499 (-40%) |
| Haddock Released (numbers, b2) | 1,101,757 | 999,282 | 527,459 (-47%) |
| Haddock Removals (numbers, a+b1+(b2*season/size release mortality)) | 1,724,792 | 1,306,723 | 747,229 (-43%) |
| Haddock Removals (weight³, mt) | 1,485 | 1,119 | 612 (-45%) |
| Haddock Avg. Catch Per Trip (numbers) | 7.8 | 8.9 | 6.7 (-25%) |

¹Source: Available MRIP data (new currency) as of Nov. 5, 2019

²Number of angler trips that targeted and/or caught cod or haddock

³All weights are based on round weights calculated from MRIP length frequencies and length to weight equations used in the assessments.

6.5.1.2.3 Option C – Closed Area I Hook Gear Haddock Special Access Program

Option C1: No Action

The Georges Bank (GB) cod Incidental Catch Total Allowable Catch (TAC) is currently 2 percent of the common pool sub-ACL for GB cod. The Incidental Catch TAC is subdivided between the Regular B Days-at-Sea (B DAS) Program (50%), Eastern US/Canada Haddock SAP (34%) and CAI HGH SAP (16%).

Under Option C1/No Action, these allocations would remain. Sixteen percent of the Incidental Catch TAC would continue to be allocated for use by common pool vessels operating in the CAI HGH SAP.

The No Action is expected to result in neutral economic impacts. The Council's Omnibus Essential Fish Habitat Amendment (OHA2), implemented on April 9, 2018, eliminated the year-round closure of CAI. When OHA2 eliminated CAI, the CAI HGH SAP became unnecessary, because, aside from the Georges Bank Dedicated Habitat Research Area and the Seasonal CAI North closure (February 1 – April 15), the geographic area once covered by CAI is now an open area accessible to the groundfish fleet.

Option C2: Revise the GB cod Incidental Catch TAC to remove the allocation for the Closed Area I Hook Gear Haddock SAP (CAI HGH SAP).

Under Option C2, the allocation to the CAI HGH SAP would be removed. To keep the allocations for the other two programs equivalent to the proportions allocated previously, the GB cod Incidental CAP would be reduced to 1.68 percent of the common pool sub-ACL, and that would then be subdivided between the B DAS Program (60%) and the Eastern US/Canada Haddock SAP (40%). This change is expected to result in neutral economic impacts relative to Option C1/No Action since no changes to the B DAS Program or the Eastern US/Canada Haddock SAP would occur and the CAI HGH SAP is an open area accessible to the groundfish fleet under Option C1/No Action.

6.5.1.2.4 Option D– Midwater Trawl Atlantic Herring Fishery sub-ACL for Georges Bank Haddock

Option D1: No Action

Under Option D1/No Action, the current sub-ACL for GB haddock in the midwater trawl Atlantic herring would be maintained at 1.5% of the US ABC, reduced by the management uncertainty buffer to determine the sub-ACL. The uncertainty buffer is currently 7%.

Impacts to the commercial groundfish fishery

No Action is expected to have neutral economic impacts on the commercial groundfish fishery. GB haddock is consistently a low-utilization stock with less than 10% utilization, on average, over the last three fishing years (see Table X – Biological Impacts). ACLs are expected to remain high over the next three fishing years so utilization by the groundfish fishery should not be affected by the midwater trawl herring fishery sub-ACL for GB haddock.

Impacts to the commercial midwater trawl herring fishery

No Action is expected to have neutral economic impacts on the midwater trawl herring fishery. Since FY2017, the total herring ACL has decreased while the GB haddock ACL has increased, decreasing total landings of both herring and GB haddock and decreasing the utilization of GB haddock. In FY 2017 and FY 2018, approximately 45 mt of GB haddock was landed or 6% of the sub-ACL (See Table X- Biological Impacts). Amendment 6 set herring ACLs for FY 2019-2021 to decline over the specification period so it is unlikely that GB haddock utilization will increase. Since 2010, the maximum estimated catch of GB haddock in a year for the herring fishery was 290mt, occurring in 2013. Under No Action, the GB haddock sub-ACL would be 1,047 mt in 2020.

Option D2: Increase the MWT Atlantic herring fishery sub-ACL for GB haddock to 2 percent

Option D2 would increase the current sub-ACL for GB haddock in the midwater trawl Atlantic herring from 1.5% of the US ABC to 2% of the U.S. ABC, reduced by the management uncertainty buffer to determine the sub-ACL. The uncertainty buffer is currently 7%. The review process would also be maintained as described under the No Action.

Impacts to the commercial groundfish fishery

Relative to Option D1/No Action, Option D2 is expected to have neutral economic impacts on the commercial groundfish fishery. GB Haddock is consistently a low-utilization stock with less than 15% utilization over the last three fishing years (See Table X- Biological Impacts). ACLs are expected to remain high over the next three fishing years so utilization by the groundfish fishery should not be affected by an increase of 0.5% to the herring sub-ACL.

Impacts to the commercial herring fishery

Relative to Option D1/No Action, Option D2 is expected to have neutral economic impacts on the herring fishery. Table 11 and Table 12 provide recent economic information about the herring fishery and mackerel fishery (overlapping the GB haddock AM area). Since FY 2017, the total herring ACL has decreased while the GB haddock ACL has increased, decreasing total landings of both herring and GB haddock and decreasing the utilization of GB haddock. In FY 2017 and FY 2018, approximately 45 mt of GB haddock was landed or 6% of the sub-ACL (See Table X- Biological Impacts). Amendment 6 set herring ACLs for FY 2019-2021 to decline over the specification period so it is unlikely that GB haddock utilization will increase.

Table 11. Average monthly herring catch, revenue and price per pound (Nominal \$) received by limited access and open access herring-permitted vessels, groundfish fishing years 2016-2017.

| <u>Month</u> | <u>Herring Catch</u> | <u>Revenue (2018 Dollars)</u> | <u>Price (2018 Dollars)</u> |
|--------------|----------------------|-------------------------------|-----------------------------|
| Jan | 3,737,844 | \$524,023 | \$0.14 |
| Feb | 0 | \$0 | \$0.00 |
| Mar | Conf | Conf | Conf |
| Apr | 0 | \$0 | \$0.00 |
| May | 11,240,380 | \$2,058,238 | \$0.18 |
| Jun | 3,285,825 | \$759,172 | \$0.23 |
| Jul | Conf | Conf | Conf |
| Aug | 142,250 | \$42,704 | \$0.30 |
| Sep | 9,515,139 | \$2,509,782 | \$0.26 |
| Oct | 6,853,228 | \$1,481,090 | \$0.22 |
| Nov | 4,947,329 | \$963,096 | \$0.19 |
| Dec | 171,650 | \$20,375 | \$0.12 |

Table 12. Average mackerel landings (landed lbs.) from limited access and open access herring-trips inside GM haddock AM area, groundfish fishing years 2016-2017.

| <u>Month</u> | <u>Mackerel Catch</u> | <u>Revenue (2018 Dollars)</u> | <u>Price (2018 Dollars)</u> |
|--------------|-----------------------|-------------------------------|-----------------------------|
| Jan | 2,035,785 | \$344,500 | \$0.17 |
| Feb | 0 | \$0 | \$0.00 |
| Mar | Conf | Conf | Conf |
| Apr | 0 | \$0 | \$0.00 |
| May | 1,127,293 | \$422,478 | \$0.37 |
| Jun | 12,425 | \$7,898 | \$0.64 |
| Jul | 0 | \$0 | \$0.00 |
| Aug | Conf | Conf | Conf |
| Sep | 1,158 | \$351 | \$0.30 |
| Oct | 135,140 | \$31,991 | \$0.24 |
| Nov | Conf | Conf | Conf |
| Dec | Conf | Conf | Conf |

6.5.1.2.5 Option E – Atlantic Sea Scallop Fishery sub-ACL for Southern New England/Mid-Atlantic Yellowtail Flounder

Option E1: No Action

Under Option E1/No Action, there would be no changes to the scallop fishery sub-ACL for SNE/MA yellowtail flounder for FY2020. The scallop fishery sub-ACL for SNE/MA yellowtail flounder would be 16 mt, the value specified in FW57. Beyond FY2020, no scallop fishery sub-ACL would be specified for SNE/MA yellowtail flounder. The scallop fishery AM is triggered either when the scallop fishery catch exceeds the sub-ACL by 50% or more or if the scallop fishery catch exceeds the sub-ACL by any amount and total catch exceeds the overall ACL.

Impacts to the scallop fishery

In FY2020, economic impacts on the scallop fishery under Option E1/No Action relative to Option E2 would be neutral, since the sub-ACL would continue to be allocated at 16 mt which greatly exceeds bycatch projections. Impacts to the scallop fishery may be positive beyond FY2020 if the sub-ACL is not allocated and scallop AMs no longer exist.

Impacts to the commercial groundfish fishery

In FY2020, economic impacts on the commercial groundfish fishery under Option E1/No Action would be negative for the sector component of the commercial groundfish fishery and strongly negative for the common pool since the scallop sub-ACL would continue to be allocated at 16 mt, so the commercial sectors sub-ACL would be 2 mt and the common pool sub-ACL would be 0 mt, closing down the fishery in the southern areas. Between FY2016 and FY2018 average groundfish revenue from common pool vessels in these areas is \$257,801, while all revenue (groundfish and non-groundfish) on groundfish trips was an average of over one million dollars, so impacts from a closure would be substantial (Table 13).

While utilization in the commercial groundfish fishery has been low over the last few fishing years, catch has been over 8.5 mt in every fishing year, which would exceed the Option E1/No Action sub-ACL. In FY2021-FY2022, lack of specification of a sub-ACL for the scallop fishery could cause negative economic impacts to the commercial groundfish fishery if bycatch of SNE/MA yellowtail flounder in the

scallop fishery is unconstrained since only the commercial groundfish fishery would be held accountable for overages.

Table 13. Groundfish revenue and total revenue by common pool vessels fishing in statistical reporting areas 537-539 or 613 with trawl/gillnet on groundfish trips by fishing year.

| | 2016 | 2017 | 2018 | Avg. |
|--------------------|-------------|-----------|-----------|-------------|
| Groundfish Revenue | \$413,625 | \$215,298 | \$144,479 | \$257,801 |
| Total Revenue | \$1,358,458 | \$858,828 | \$846,291 | \$1,021,192 |

Option E2: Set the Atlantic Sea Scallop Fishery Sub-ACL for SNE/MA yellowtail flounder using 90% of projected scallop fishery catch

Impacts to the scallop fishery

Relative to No Action, under Option E2 economic impacts to the scallop fishery will be neutral to low negative for FY2020 to FY2022, depending on the likelihood that the scallop sub-ACL will be exceeded. Bycatch projections ranged from 1.45 mt to 2.59 mt in FY2020, however FY2021 and FY2022 were unavailable at the time. This will be updated following the Council’s final action on Scallop FW32. However, bycatch projections for the scallop fishery in FY2020 under most alternatives under consideration are very close to the sub-ACL.

Impacts to the commercial groundfish fishery

Relative to No Action, Under Option E2 economic impacts to the commercial groundfish fishery will be positive to strongly positive since the commercial groundfish sub-ACL would be 15 mt, which is less than the two year average catch in the fishery and much larger than the sub-ACL under No Action. Relative to status quo, the fishery may be more constrained and have a greater risk of exceeding the sub-ACL than in previous years since past fishing years ACLs have been much higher, from 204 mt in FY2016 to 43 mt in FY2018.

6.6 ACTION 2 – RECREATIONAL FISHERY MEASURES FOR GEORGES BANK COD

6.6.1 Alternative 1 – No Action

Under the Alternative 1/No Action alternative, the Regional Administrator would not have the temporary authority to adjust recreational management measures for Georges Bank cod. Instead, Council action would be needed to adjust the management measures.

Impacts to the Commercial Fishery

Relative to Alternative 2, Alternative 1/No Action is expected to have neutral to negative economic impacts, because the Regional Administrator would not have the authority to make changes to recreational management measures. Current management measure in place would remain. Management

measures may be needed to control recreational fishing effort and ensure that the catch target is not exceeded, which may negatively affect the commercial fishery if the total ACL is exceeded. Catches of GB cod by the recreational fishery in FY2016 lead to overages, and payback by the commercial fishery in FY2018

Impacts to the Recreational Fishery

Relative to Alternative 2, Alternative 1/No Action is expected to have neutral to negative economic impacts on the recreational fishery, because the Regional Administrator would not have the authority to make changes to recreational management measures. Current management measure in place would remain. Management measures may be needed to control recreational fishing effort and ensure that the catch target is not exceeded. Catches of GB cod by the recreational fishery in FY2016 lead to overages. Negative impacts may result if management measures currently in place are too restrictive and lead to lost recreational fishing revenue or reduced private angler benefits.

6.6.2 Alternative 2 – Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod

This alternative would grant the Regional Administrator with temporary flexibility to adjust the recreational management measures for Georges Bank cod without requiring action by the Council.

Impacts to the Commercial Fishery

Relative to Alternative 1/No Action, Alternative 2 is expected to have neutral to positive economic impacts, because it would allow the Regional Administrator the authority to make changes to recreational management measures which may be needed to control recreational fishing effort and ensure that the catch target is not exceeded, which may reduce the chance the overall ACL would be exceeded and need for the commercial fishery to payback the overage in a future fishing year.

Impacts to the Recreational Fishery

Relative to Alternative 1/No Action, Alternative 2 is expected to have mixed (positive, neutral, or negative) economic impacts, because it would allow the Regional Administrator the authority to make changes to recreational management measures which may be needed to control recreational fishing effort and ensure that the catch target is not exceeded. Negative impacts may result if management measures are too restrictive and lead to lost recreational fishing revenue or reduced private angler benefits, while positive impacts may occur if fishery overages occur without in-season adjustments. Additionally if the catch target is based on old MRIP estimates from the 2017 stock assessment, this would result in a mismatch to the 2019 stock assessment, FY2020 and beyond quota setting, and FY2020 and beyond catch accounting, which could lead to more restrictive recreational measures in FY2020 and FY2021 (Table 7 and Table 8).

6.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

6.6 IMPACTS ON HUMAN COMMUNITIES- SOCIAL

National Standard 8 (NS8) requires the Council to consider the importance of fishery resources to affected communities and provide those communities with continuing access to fishery resources, but it does not allow the Council to compromise the conservation objectives of the management measures. Thus, continued overall access to fishery resources is a consideration, but not a guarantee that fishermen would be able to use a particular gear type, harvest a particular species of fish, fish in a particular area, or fish during a certain time of the year.

A fundamental difficulty exists in forecasting social change relative to management alternatives, since communities or other societal groups are constantly evolving in response to external factors (e.g., market conditions, technology, alternate uses of waterfront, tourism). Certainly, fishery regulations influence the direction and magnitude of social change, but attribution is difficult with the tools and data available.

While the focus here is on the social impacts of the alternatives, external factors may also influence change, both positive and negative, in the affected communities. External factors may also lead to unanticipated consequences of a regulation, due to cumulative impacts. These factors contribute to a community's ability to adapt to new regulations. When examining potential social impacts of management measures, it is important to consider impacts on the following: the fishing fleet (vessels grouped by fishery, primary gear type, and/or size); vessel owners and employees (captains and crew); groundfish dealers and processors; final users of groundfish; community cooperatives; fishing industry associations; cultural components of the community; and fishing families. While some management measures may have a short-term negative impact on some communities, these should be weighed against potential long-term benefits to all communities which can be derived from a sustainable groundfish fishery.

Social Impact Factors. The social impact factors outlined below can be used to describe the Northeast multispecies (groundfish) fishery, its sociocultural and community context, and its participants. These factors or variables are considered relative to the management alternatives and used as a basis for comparison between alternatives. Use of these kinds of factors in social impact assessment is based on NMFS guidance (NMFS 2007a) and other texts (e.g., Burdge 1998). Longitudinal data describing these social factors region-wide and in comparable terms is limited. Qualitative discussion of the potential changes to the factors characterizes the likely direction and magnitude of the impacts.

The social impact factors fit into five categories:

1. *Size and Demographic Characteristics* of the fishery-related workforce residing in the area; these determine demographic, income, and employment effects in relation to the workforce as a whole, by community and region.
2. The *Attitudes, Beliefs, and Values* of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding the behavior of fishermen on the fishing grounds and in their communities.
3. The *Social Structure and Organization*; that is, changes in the fishery's ability to provide necessary social support and services to families and communities, as well as effects on the community's social structure, politics, etc.

4. The *Non-Economic Social Aspects* of the fishery; these include lifestyle, health, and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.
5. The *Historical Dependence on and Participation in* the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution, and rights (NMFS 2007a).

Data utilized to inform the social impact factors include the 2004-2018 Groundfish-Specific Commercial Engagement and 2016 Reliance Indicators and the 2012-2016 Community Social Vulnerability Indicators (CSVI). These data sources constitute the best available social scientific data on fishing industry participants and communities engaged in the groundfish fishery in the Northeast.

2004-2018 Groundfish-Specific Commercial Engagement

The Groundfish-Specific Engagement Indicator is a numerical index that reflect the level of a community's engagement in the groundfish fishery relative to other communities in the Northeast. This index was generated using a principal components factor analysis (PCFA) of variables related to groundfish fishing activity from NOAA Fisheries regional datasets. PCFA is a common statistical technique used to identify factors that are related, yet linearly independent, and likely represent a latent or unobservable concept when considered together, such as factors that contribute to the level of a community's social vulnerability or engagement in commercial fishing. The variables that were identified to best reflect community engagement in the groundfish fishery were the value of groundfish landings (in dollars), the groundfish pounds landed, the number of federally permitted dealers that purchased at least one pound of groundfish, and the number of vessels with at least one category of large mesh groundfish permit (multiple permits on one vessel in a given year are not double counted). It should be noted that a high engagement score does not necessarily mean that a community or its fishery participants are solely dependent upon commercial groundfish fishing activities. There may be other commercial fishing or economic activities that may sustain the livelihoods of individuals or entities within these communities that have relied on groundfish historically.

Figure 1 displays the factor scores for the Groundfish-Specific Commercial Engagement Indicator for the ten communities that have the highest average commercial engagement with groundfish between 2004 and 2018. The index factor scores are commonly categorized from low to high based on the number of standard deviations from the mean, which is set at zero. Categories rank from 0.00 or below as "low", 0.00 – 0.49 as "medium," and 0.50 – 0.99 as "medium-high," and 1 standard deviation or above as "high." All of the ports displayed in Figure 1 have "high" commercial groundfish engagement, but New Bedford and Gloucester have had dramatically higher levels of engagement in commercial groundfish than other highly engaged ports over the last fifteen years. These two communities had more than twice the level of engagement in commercial groundfish than the third most highly engaged community, Boston, MA. The remaining seven highly engaged communities included, in order of their levels of engagement: Narragansett/Point Judith, RI, Portland, ME, Montauk, NY, Chatham, MA, Hampton Bays/Shinnecock, NY, Scituate, MA, and Cape May, NJ. Most of these communities have fluctuated in engagement over time, but New Bedford, Portland, and Chatham have displayed a clear trend of declining engagement over the fifteen-year period from 2004 to 2018. Boston has been the only community with a clear trend of increasing engagement over this period. In recent years, Narragansett/Point Judith and Montauk have declined in engagement in commercial groundfish.

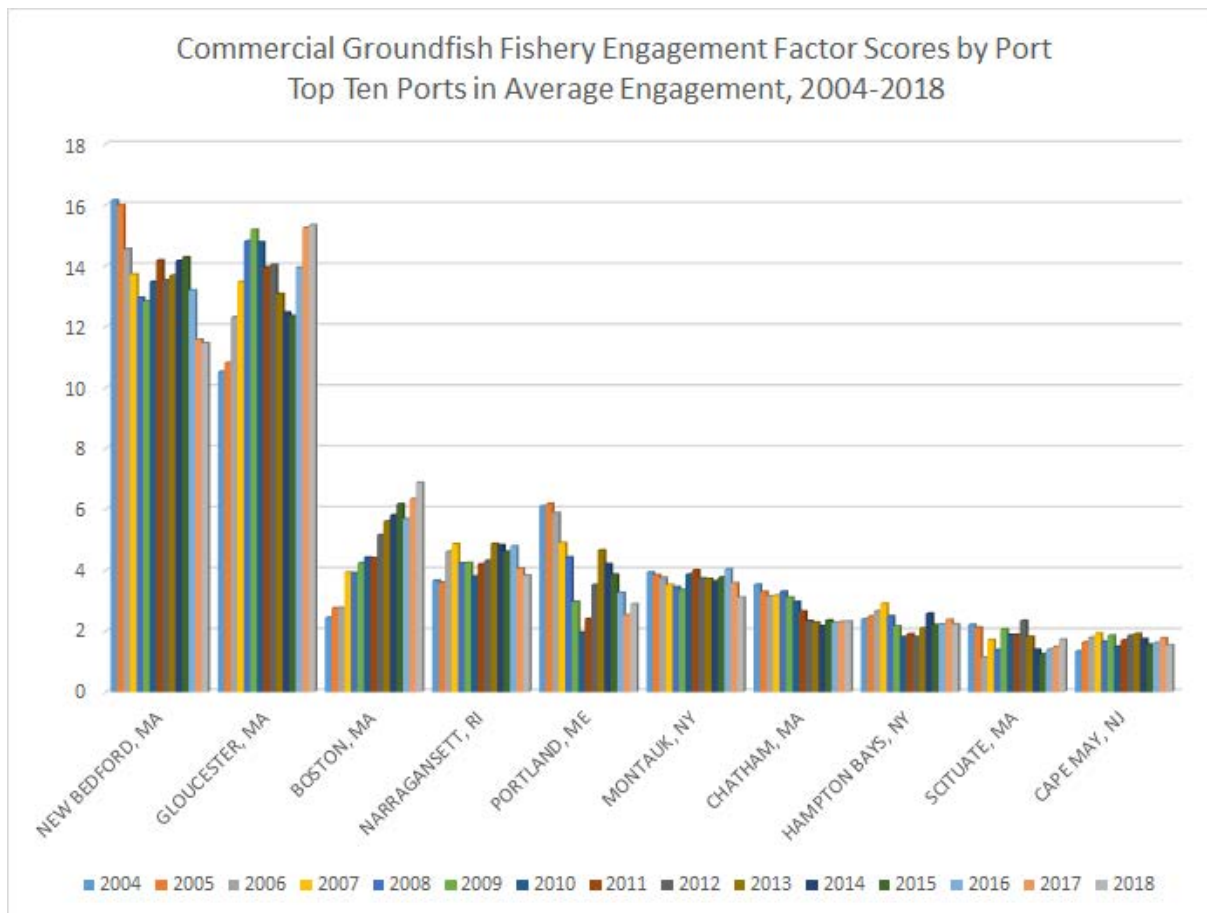


Figure 1- Commercial Groundfish Fishery Engagement Scores by port, 2004-2018.

2016 Groundfish-Specific Commercial Reliance Indicator

The Groundfish-Specific Reliance Indicator are numerical indices that reflect the level of a community's reliance upon the groundfish fishery relative to other communities in the Northeast. These indices were generated using a PCFA of variables related to groundfish fishing activity from NOAA Fisheries regional datasets. Variables that represent community commercial groundfish reliance were the value of landed groundfish per 1,000 population, groundfish pounds landed per 1,000 population, the number of federally permitted dealers that purchased at least one pound of groundfish per 1,000 population, and the number of vessels with a groundfish permit per 1,000 population. It should be noted that while groundfish-specific commercial reliance is designed to measure the amount that a community may be reliant upon the commercial groundfish fishery, the total population size of a given community can have an outsized influence on the level of reliance reflected in the index scores. Also, the groundfish-specific commercial reliance indicator does not necessarily mean that a community or its fishery participants are solely dependent upon commercial groundfish fishing activities. There may be other commercial fishing or economic activities that may sustain the livelihoods of individuals or entities within these communities that have relied in groundfish historically. All the engagement and reliance index variables were constructed as 5-year averages in order to match the range of years considered in the 5-year American Community Survey estimates utilized to create the CSVIs.

2012-2016 Community Social Vulnerability Indicators

The CSVIs include indices of labor force structure, housing characteristics, poverty, population composition, and personal disruption. The labor force structure index measures the makeup of the labor force and is reversed scored so that a higher factor score represents fewer employment opportunities and greater labor force vulnerability. The housing characteristics index measures vulnerability related to infrastructure and home and rental values. It is also reversed score so that a higher score represents more vulnerable housing infrastructure. The poverty index captures multiple different factors that contribute to an overall level of poverty in each area. A higher poverty index score would indicate a greater level of vulnerability due to a higher proportion of residents receiving public assistance and below federal poverty limits. The population composition index measures the presence of vulnerable populations (i.e., children, racial/ethnic minorities, and/or single-parent, female-headed households) and a higher score would indicate that a community's population is composed of more vulnerable individuals. Finally, the personal disruption index considers variables that affect individual-level vulnerability primarily and include factors such as low individual-level educational attainment or unemployment. Higher scores of the personal disruption index likely indicate greater levels of individual vulnerability within a community, which can in turn impact the overall level of community social vulnerability.

Data used to develop these indices come from multiple secondary data sources, but primarily the U.S. Census American Community Survey (ACS) at the place level (Census Designated Place (CDP) and Minor Civil Division (MCD)). More information about the data sources, methods, and other background details can be found online at <https://www.st.nmfs.noaa.gov/humandimensions/social-indicators/>.

Table 1 displays the factor scores for the Groundfish-Specific Commercial Engagement and Reliance Indicators and CSVIs for those communities that have high commercial engagement with groundfish. The index factor scores are commonly categorized from low to high based on the number of standard deviations from the mean, which is set at zero. Categories rank from 0.00 or below as "low", 0.00 – 0.49 as "medium," and 0.50 – 0.99 as "medium-high," and 1 standard deviation or above as "high." Medium-high scores are highlighted in Table 1 by orange and high scores are highlighted by red. Since all the communities listed are those communities that have high groundfish-specific commercial engagement, none of the factor scores in the commercial engagement score column needed to be highlighted for emphasis. Place-level population size as estimated by the 2016 ACS is also given in Table 1.

Table 1- 2016 Groundfish-Specific Commercial Engagement, Reliance and Social Vulnerability Indicator Factor Scores for Communities Highly Engaged in the Commercial Groundfish Fishery.

| <i>Community</i> | Population Size (2016) | Groundfish Commercial Engagement and Reliance | | Social Vulnerability | | | | |
|-------------------------------|-------------------------------|--|-----------------|-----------------------------|--------------------------------|----------------|-------------------------------|----------------------------|
| | | <i>Engagement</i> | <i>Reliance</i> | <i>Labor Force</i> | <i>Housing Characteristics</i> | <i>Poverty</i> | <i>Population Composition</i> | <i>Personal Disruption</i> |
| Gloucester, MA | 29,546 | 14.901 | 10.675 | -0.117 | 0.019 | -0.352 | -0.709 | -0.313 |
| New Bedford, MA | 94,988 | 13.968 | 3.282 | -0.177 | 0.501 | 1.229 | 0.743 | 0.877 |
| Boston, MA | 658,279 | 6.188 | 0.012 | -0.888 | -0.037 | 0.933 | 0.781 | 0.421 |
| Narragansett/Point Judith, RI | 15,672 | 4.790 | 2.368 | 0.093 | -0.177 | -0.860 | -0.975 | -0.458 |
| Montauk, NY | 3,510 | 3.984 | 4.251 | 0.221 | -0.403 | -0.034 | -0.516 | -0.617 |
| Portland, ME | 66,649 | 3.348 | 3.251 | -0.990 | 0.351 | 0.666 | -0.315 | -0.088 |
| Chatham, MA | 1,429 | 2.621 | 2.234 | 0.951 | 0.067 | 0.216 | -0.784 | -0.367 |
| Scituate, MA | 18,390 | 2.380 | 1.912 | -0.294 | -0.879 | -0.606 | -0.803 | -0.735 |
| Hampton Bays/ NY | 13,040 | 2.092 | 1.554 | -0.016 | -0.725 | -0.614 | -0.008 | -0.539 |
| Cape May, NJ | 3,529 | 1.617 | 1.379 | 1.192 | 0.196 | -0.164 | -0.779 | -0.699 |
| Portsmouth, NH | 21,458 | 1.435 | 1.182 | -0.895 | 0.074 | -0.729 | -0.744 | -0.677 |
| New London, CT | 27,218 | 1.198 | -0.161 | -0.549 | 0.540 | 1.555 | 0.722 | 1.189 |
| Point Pleasant, NJ | 18,464 | 1.180 | 0.757 | -0.725 | -0.662 | -0.624 | -0.763 | -0.648 |

6.6.1 Action 1 – Specifications

6.6.1.1 Alternative 1 - No Action

Under Alternative 1/No Action, default specifications would be in effect from May 1, 2020, to July 31, 2020, and would equal 35% of the FY2019 catch limits, which would be necessary for Eastern GB cod and Eastern GB haddock and would use FY2019 catch limits as a basis for also adjusting GB cod and GB haddock for expected Canadian catches. All other stocks have FY2020 specifications adopted in FW57 and FW58. There would be no new FY2020 quotas specified for the transboundary Georges Bank stocks (i.e. GB cod, GB haddock, GB yellowtail flounder), which are managed through the US/CA Resource Sharing Understanding. These quotas are specified annually.

For FY2020, Alternative 1/No Action is anticipated to have negative social impacts in terms of the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* of the commercial groundfish fishery due to reductions in fishing opportunity and resultant losses in employment and income in the Eastern Georges Bank management area. After July 31, 2020, ACLs would not be defined for EGB cod or haddock in the multispecies groundfish fishery. Without specification of these ACLs, catches would not be allocated to the groundfish fishery (sectors or common pool vessels) and targeted groundfish fishing activity would not occur for these stocks. Catches would not be eliminated because

there would likely be incidental catches in other fisheries. This would likely precipitate a reduction in income for vessels and possible loss of employment opportunities for crew members typically employed on vessels that target those groundfish stocks. For all other stocks and fisheries with sub-ACLs, impacts to the commercial groundfish fishery, recreational groundfish fishery, sea scallop fishery, Atlantic herring fishery, small-mesh fisheries, and large-mesh non-groundfish fisheries will be relatively neutral compared to FY 2019 because ACLs are defined in FWs 57 and 58 through FY2020, with little to no change in ACLs from FY2019 to FY2020 under Alternative 1/No Action (see Economic Impacts for the details).

In particular, communities that are both highly engaged in *and* reliant upon groundfish relative to other communities in the region will likely be more susceptible to the negative impacts of selecting Alternative 1/No Action. These communities include Gloucester, New Bedford, Chatham, and Scituate, MA, Narragansett and Point Judith, RI, Portland, ME, Montauk and Hampton Bays, NY, Cape May, NJ, and Portsmouth, NH. New Bedford, Portland, Chatham, and Cape May are the four key communities that have high engagement and moderately-high to high reliance in commercial groundfish *and also* exhibit moderately-high to high vulnerability on at least one indicator of social vulnerability. New Bedford may experience a disproportionately heavy burden as it scores at least moderately high on four of the five indicators of social vulnerability and stands apart on these factors from other communities that are highly reliant upon groundfish. It has the highest poverty factor score of all groundfish-engaged and –reliant communities and has moderately high housing, population composition, and personal disruption vulnerabilities. In addition to New Bedford, Cape May and Chatham have high and moderately high labor force vulnerability, respectively, and could experience relatively greater impacts from the selection of the No Action alternative. High labor force structure vulnerability could mean fewer alternative employment opportunities for crew, hired captains, or vessel owner-operators that could be forced out of the industry due to the selection of Alternative 1/No Action.

Given that the most recent scientific information available for these stocks (i.e., 2019 stock assessments) would not be utilized under Alternative 1/No Action, there would also likely be negative impacts on the *Attitudes, Beliefs, and Values* of fishery participants. Trust and confidence in management among commercial fishing industry participants involved in the directed groundfish fishery would likely be negatively impacted if management does not utilize the best available scientific data in timely manner to set annual catch limits.

6.6.1.2 Alternative 2 – Revised Specifications

This measure would adopt new specifications for fifteen groundfish stocks consistent with the most recent stock assessment information. Under Alternative 2, the annual specification for FY2020 – FY2022 for GB cod, GOM cod, GB haddock, GOM haddock, GB yellowtail flounder, CC/GOM yellowtail flounder, SNE/MA yellowtail flounder, GB winter flounder, American plaice, witch flounder, pollock, white hake, Atlantic halibut, Northern windowpane flounder, and Southern windowpane flounder would be as specified as in Table 5 (see draft alternatives, dated Nov. 25, 2019).

Impacts on the commercial groundfish fishery

Alternative 2 is expected to have low positive social impacts on the commercial groundfish fishery relative to Alternative 1/No Action, because default specifications would not be necessary on Eastern George Bank.

When comparing FY2019 to FY2020 under Alternative 2, several of the allocated stocks will see modest to substantial increases, ranging from a 2% increase for redfish to an increase of 79% for American plaice. While most of the historically constraining stocks are not proposed to see any substantial increases in their sub-ACL values, CC/GOM yellowtail flounder sub-ACL will increase by 73% to 688 mt. In addition, another nearly fully utilized stock, witch flounder, will see a 53% increase. Just over half (e.g., eight out of fifteen) of the allocated stocks are proposed to receive substantial reductions in sub-ACL values, ranging from a decrease of 16% for GOM haddock to a decrease of 63% for pollock. Both GB cod and GOM cod will continue to see reductions from the previous fishing year (31% decrease and 24% decrease, respectively).

Given the mix of increases and decreases in commercial sub-ACL values, Alternative 2 is expected to have a mix of impacts (low negative, neutral, or low positive) in terms of the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* of the commercial groundfish fishery, to the extent that constraining stocks in the Gulf of Maine and Georges Bank can be avoided in order to target stocks that have increased ACLs. New Bedford is highly engaged in and reliant upon commercial groundfish and is also moderately to highly vulnerable across most dimensions of community social vulnerability. Commercial groundfish fishery participants operating out of New Bedford may experience outsized impacts depending upon the species targeted or types of fishing trips they take. Regardless of trip characteristics, however, New Bedford community members are expected to experience positive social impacts from Alternative 2 relative to Alternative 1/No Action because Alternative 1/No Action could result in the fishery shutting down altogether on Eastern Georges Bank.

Impacts on the recreational groundfish fishery

Similarly, the recreational groundfish fishery will see a mix of changes to sub-ACL values. While GOM Cod will have a reduction of 12%, GOM Haddock will see an increase of 14%. However, because the GOM cod sub-ACL constrains catches of GOM haddock, alternative 2 is expected to have neutral to low negative social impacts relative to the No Action alternative in terms of the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* of the recreational groundfish fishery.

Impacts on other fisheries

Atlantic Sea Scallop Fishery

Alternative 2 is expected to have low negative social impacts on the sea scallop fishery because of the substantial reduction in the sea scallop sub-ACL value for SNE/MA yellowtail flounder. Although, the sub-ACL reductions between FY2019 and FY2020 from 15 mt to 2mt would be 87% lower, the sub-ACL for SNE/MA yellowtail flounder is based on projected bycatch in the sea scallop fishery. Moreover, both windowpane flounder stocks will also see moderate reductions in their sub-ACL values for the sea scallop fishery.

Midwater trawl directed Atlantic herring fishery

The midwater trawl herring fishery will have mixed changes in sub-ACL values. Under Alternative 2, while GB haddock is proposed to increase by 72% between FY2019 and FY2020, GOM haddock would be reduced by 8%. Social impacts are expected to be neutral given recent low catches of both haddock stocks.

Small mesh fisheries

Under Alternative 2, there will be no change in GB yellowtail flounder for small-mesh fisheries from FY2019 to FY2020. Social impacts are expected to be neutral given recent low catches of GB yellowtail flounder.

Large-mesh non-groundfish fisheries

The southern windowpane flounder “other fisheries” sub-component is used to evaluate when an AM could be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl fisheries). Under Alternative 2, the other sub-component would reduce from 218 mt in FY2019 to 196 mt in FY2020, a decrease of 10%. Social impacts are expected to be low negative.

6.6.1.2.1 Option A – Recreational Fishery Georges Bank Cod Catch Target

Option A1: No Action

Under Option A1/No Action, the recreational catch target for GB cod would remain in place for FY2020. However, the catch target would not continue after FY2020. Starting in FY2021 when a GB cod catch target would not be in place, recreational fishery participants may have increased flexibility to operate in waters otherwise avoided due to constraining cod stocks, and may see resultant increases in business activities and revenues. However, without a cod catch target going forward, participants in the commercial groundfish fishery may lose trust in the fairness and equitability of the management system as their catch will continue to be affected by constraining cod stocks.

Option A1/No Action is anticipated to have low negative (in FY2020) to low positive (in FY2021 and beyond) social impacts on the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* of human communities linked to the recreational fishery, but may have negligible to low positive (in FY2020) or low negative (FY2021 and beyond) social impacts on the *Attitudes, Beliefs, and Values* of stakeholders and community members linked to the commercial groundfish fishery.

Option A2: Recreational fishery GB cod catch target

Option A2 would extend the existing catch target for GB cod through FY2022. This may have negligible to low negative social impacts, relative to Option A1/No Action, on human communities and stakeholders linked to the recreational fishery. Recreational fishery participants may undergo challenging business seasons as their cod catch target may become limiting over time, assuming the stock does not substantially rebound to levels that place it outside the categories of overfished and overfishing occurring.

On the other hand, Option A2 may have negligible to low positive social impacts, relative to Option A1/No Action, on the commercial groundfish fishery relative to the *Attitudes, Beliefs, and Values* of participants and community members. If the catch target successfully maintains catches at or below the target, the continuation of the cod catch target for the recreational fishery will instill faith in the process among commercial stakeholders and renew trust among these participants that management will continue to manage the stocks equitably across industries participating in the groundfish fishery. Negative social impacts may result if the catch target is seen as too high and reduces the ability of the commercial fishery to maximize revenues under the overall ACL.

6.6.1.2.2 Option B – Allocation between Commercial and Recreational Fisheries for Gulf of Maine Cod and Gulf of Maine Haddock

Option B1: No Action

Under Option B1/No Action, the allocation between the commercial and recreational fisheries for GOM cod and GOM haddock would remain the same. Option B1/No Action is expected to have neutral to negative social impacts on the recreational groundfish fishery, specifically, depending on the ability for recreational measures to be adjusted to constrain fishing effort. Option B1/No Action is expected to have negligible to negative long-term impacts on the commercial fishery, depending on whether recreational catches would lead to overages in future years. By setting allocations without using the most recent assessment data to inform the process, Option B1/No Action will likely have high negative impacts on the *Attitudes, Beliefs, and Values* of stakeholders and community members across both recreational and commercial groundfish fisheries.

Option B2: Revise the allocation between commercial and recreational fisheries for GOM cod and GOM haddock.

Option B2 allows for the revision of commercial and recreational allocations to be based on the best scientific information available from the most recent stock assessments. Therefore, Option B2 will have at least negligible to low positive impacts on the commercial fishery and likely a high positive social impact on the recreational fishery. Recreational allocations of both GOM cod and GOM haddock would see increases and, additionally, the best available scientific information would be utilized to inform these revised allocations.

6.6.1.2.3 Option C – Closed Area I Hook Gear Haddock Special Access Program

Option C1: No Action

Option C1/No Action would maintain the current allocation to the Closed Area I Hook Gear Haddock Special Access Program. This would likely produce negligible to low negative social impacts in terms of the *Attitudes, Beliefs, and Values* of stakeholders and community members of the commercial and recreational groundfish fisheries because an allocation would remain for a program that is no longer necessary due to prior Council action.

Option C2: Revise the GB cod Incidental Catch TAC to remove the allocation for the Closed Area I Hook Gear Haddock SAP (CAI HGH SAP).

Option C2 would likely result in negligible to low positive social impacts in terms of the *Attitudes, Beliefs, and Values* of the stakeholders and community members of the commercial and recreational groundfish fisheries. This option would remove an unnecessary allocation, thus reducing the amount of regulations and improving the perception among stakeholders that the regulatory structure can respond and adapt when rules and regulations are no longer needed.

6.6.1.2.4 Option D– Midwater Trawl Atlantic Herring Fishery sub-ACL for Georges Bank Haddock

Option D1: No Action

Option D1/No Action would maintain the current sub-ACL for GB haddock in the Midwater Trawl Atlantic Herring fishery. This would likely result in negligible social impacts for the midwater trawl Atlantic herring fishery. The current sub-ACL will help to ensure the long-term sustainability of GB haddock and therefore lead to positive social impacts for the groundfish fishery.

Option D2: Increase the MWT Atlantic herring fishery sub-ACL for GB haddock to 2 percent

Option D2 will likely have negligible social impacts on the groundfish fishery, but negligible to low positive social impacts on the midwater trawl Atlantic herring fishery. While an increase of 0.5% in the sub-ACL of GB haddock for the midwater trawl Atlantic herring fishery would not adversely affect the long-term sustainability of the stock, it could assist in the achievement of full utilization of the allowable catch of herring. This will help to maximize social and economic benefits while at the same time ensuring the protection of marine ecosystems.

6.6.1.2.5 Option E – Atlantic Sea Scallop Fishery sub-ACL for Southern New England/Mid-Atlantic Yellowtail Flounder

Option E1: No Action

Option E1/No Action would likely produce negligible to high negative social impacts for stakeholders and community members associated with the commercial groundfish fisheries, and negligible to low negative social impacts on the scallop fishery. High negative impacts would result to the common pool component of the fishery under Option E1/No Action because it would result in a 0 mt allocation, shutting down the fishery in southern statistical areas where on average a million dollars worth of revenue came from in FY2016-FY2018 on groundfish trips (see Table 13 in the Economic Impacts section). By using outdated scallop fishery bycatch projections for SNE/MA yellowtail flounder, management would not be using the best scientific information available to regulate the fishery. Moreover, no sub-ACL would be specific for SNE/MA Yellowtail Flounder beyond FY2020 for the scallop fishery. Therefore, Option E1/No Action would result in low negative impacts in terms of the *Attitudes, Beliefs, and Values* of stakeholders across all fisheries due to the failure of management to utilize the best scientific information available.

Option E2: Set the Atlantic Sea Scallop Fishery Sub-ACL for SNE/MA yellowtail flounder using 90% of projected scallop fishery catch

Option E2 is expected to have negligible to positive social impacts on the commercial groundfish fishery and mixed (negligible, low positive, or low negative) impacts on the scallop fishery relative to the Option E1/No Action. Sectors and the common poll would have greater access to the stock under Option E2 than Option E1/No Action. Option E2 would set the scallop fishery sub-ACL for SNE/MA yellowtail flounder using a threshold of 90% of projected scallop fishery catch, thus incentivizing the scallop fishery to reduce bycatch of SNE/MA yellowtail flounder while maintaining a sub-ACL for the fishery going forward. While a reduction in an already low sub-ACL for scallop fishery may make it more challenging for scallop fishery participants to prosecute the scallop fishery, Option E2 will ensure the long-term

sustainability of the stock while maximizing the potential social and economic benefits for the scallop fishery given the status of the stock.

6.6.2 Action 2 – Recreational Fishery Measures for Georges Bank Cod

6.6.2.1 Alternative 1 – No Action

Under the Alternative 1/No Action alternative, the Regional Administrator would not have the temporary authority to adjust recreational management measures for Georges Bank cod (as was previously in place for FY2018 and FY2019). Instead, Council action would be needed to adjust the management measures. This would likely result in negative social impacts on the commercial and recreational groundfish fishery participants relative to FY2019, stakeholders, or community members to the extent that in-season adjustments are needed to prevent the recreational fishery from exceeding their catch target and prevent overages in the fishery overall.

6.6.2.2 Alternative 2 – Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod

Alternative 2 would temporarily allow the Regional Administrator to adjust recreational measures for GB Cod without requiring Council action. The Council, Recreational Advisory Panel, and Groundfish Committee could still consult with the Regional Administrator to review any proposed changes prior to implementation. Relative to Alternative 1/No Action, Alternative 2 would likely result in negligible to low positive or low negative social impacts on the recreational groundfish fishery depending upon the adjustments required. The Regional Administrator could make adjustments that could temporarily improve the social and economic benefits that recreational fishery participants derive from their activities, but this alternative could also result in low negative impacts if the adjustments to GB cod limit or constrain the ability of recreational fishery participants to prosecute the fishery. The commercial groundfish fishery would have low positive or low negative social impacts depending on if the recreational measures in place were effective or not at keeping the recreational fishery from exceeding the GB cod recreational catch target.