

4.0 ALTERNATIVES UNDER CONSIDERATION

4.1 ACTION 1 – STATUS DETERMINATION CRITERIA

4.1.1 Alternative 1 - No Action

Under Alternative 1 (No Action), there would be no revisions to the status determination criteria (SDC) for Georges Bank (GB) winter flounder and Southern New England/Mid-Atlantic (SNE/MA) winter flounder (Table 2), and numerical estimates for these two stocks would not change (Table 3) since the 2018 and 2019 groundfish stock assessments.

Rationale: The No Action alternative would maintain the SDCs.

Table 2 – Alternative 1/No Action status determination.

Stock	Biomass Target (SSB _{MSY} or proxy)	Minimum Biomass Threshold	Maximum Fishing Mortality Threshold (F _{MSY} or proxy)
Georges Bank Winter Flounder	SSB _{MSY}	½ Btarget	F _{MSY}
Southern New England/Mid-Atlantic Winter Flounder	SSB _{MSY}	½ Btarget	F _{MSY}

Table 3 – Alternative 1/No Action numerical estimates of SDCs (provided for informational purposes).

Stock	Model/ Approach	B _{MSY} or Proxy (mt)	F _{MSY} or Proxy	MSY (mt)
Georges Bank Winter Flounder	VPA	8,910	0.519	4,260
Southern New England/Mid-Atlantic Winter Flounder	ASAP	24,687	0.340	7,352

4.1.2 Alternative 2 – Updated Status Determination Criteria

Alternative 2 would adopt revised SDCs for GB winter flounder and SNE/MA winter flounder (Table 4).

The NEFSC conducted management track assessments in 2020 for several stocks. This option updates the SDCs and numerical estimates of the SDCs for these stocks, based on the peer review recommendations.

Rationale: This option would update the SDCs for GB winter flounder and SNE/MA winter flounder to reflect the results of the 2020 peer reviewed management track stock assessments.

Table 4 - Alternative 2 status determination criteria.

Stock	Biomass Target (SSB_{MSY} or proxy)	Minimum Biomass Threshold	Maximum Fishing Mortality Threshold (F_{MSY} or proxy)
Georges Bank Winter Flounder	SSB _{MSY} : SSB/R (40% MSP)	½ Btarget	F40% MSP
Southern New England/Mid-Atlantic Winter Flounder	SSB _{MSY} : SSB/R (40% MSP)	½ Btarget	F40% MSP

Table 5 - Alternative 2 numerical estimates of SDCs (provided for informational purposes).

Stock	Model/ Approach	B_{MSY} or Proxy (mt)	F_{MSY} or Proxy	MSY (mt)
Georges Bank Winter Flounder	VPA	7,267	0.358	2,573
Southern New England/Mid-Atlantic Winter Flounder	ASAP	12,322	0.284	3,906

4.2 ACTION 2 – FORMAL REBUILDING PROGRAM

4.2.1 Alternative 1 - No Action

No Action. The current rebuilding plan for white hake ended in 2014, with the stock not achieving rebuilt status. In March 2020, the Council was notified that the current rebuilding strategy had not resulted in adequate progress towards rebuilding. If this option is adopted, fishing mortality (set at 75% F_{MSY}) would be maintained.

Rationale: Fishing mortality would be maintained at 75%F_{MSY}, consistent with National Standard 1 (NS1) guidelines.

4.2.2 Alternative 2 – Revised Rebuilding Strategy for White Hake

Based on the 2019 peer review, white hake is overfished but overfishing is not occurring (NEFSC 2020). This was a change in status, as the 2017 assessment concluded the stock was not overfished. Retrospective adjustments were made to the model results in the terminal year and the retrospective pattern appears to be worsening. White hake is under a rebuilding plan, but the stock did not rebuild by 2014 as planned. As previously advised by the Regional Office, the SSC and the Council has continued to set catch limits based on 75%F_{MSY}. The rho adjusted SSB in 2018 (15,891 mt) was at 50% of the rebuilding target SSB (SSB_{MSY} proxy = 31,828 mt). Biological reference points were defined as F_{MSY} = 0.1677 and SSB_{MSY} = 31,828 mt during the 2019 assessment.

Projection assumptions and projections

- Year one - The first year of the rebuilding plan would be 2021 with no revision to the ABC in place.
- Bridge year - Rebuilding plans assume an updated estimated bridge year catch in CY2019 and fishing year ACLs plus the Canadian catch assumption in 2020 and 2021.
- Recruitment – Rebuilding plans are based on projections that assumes a CDF of recruitment from the full time series, consistent with the estimated SSB_{MSY} from the benchmark assessment.
- Fishing Mortality/ $F_{rebuild}$ – These fishing mortality rates were used to develop a range of options with some projection runs conducted for comparison purposes: F0, F25, F50, F70, F75, and F_{MSY} .

Projections suggest that white hake can rebuild in 5 years (by 2026) at $50\%F_{MSY}$ or 7 years (by 2028) at $75\%F_{MSY}$, with a 50 percent probability of achieving SSB_{MSY} . Additional factors were considered in determining T_{target} , which are discussed in the rationale, to set T_{target} at 10 years for a range of $F_{rebuild}$ options between $50\%F_{MSY}$ and $75\%F_{MSY}$. For a given T_{target} , a lower F rate would also increase the probability of rebuilding. $F_{rebuild}$ is determined as a percentage of F_{MSY} and the calculation of the probability of achieving B_{MSY} is to ensure the option meets the T_{min} standard (i.e., greater than or equal to 50% probability of success).

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

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

Options - $T_{target} = T_{max}$, which is 10 years (2031).

- A. T_{target} of 10 years, rebuilding by 2031, at $F_{rebuild}$ of $50\%F_{MSY} = 0.084$, which results in a 98.6% probability of achieving B_{MSY} ,
- B. T_{target} of 10 years, rebuilding by 2031, at $F_{rebuild}$ of $70\%F_{MSY} = 0.117$, which results in a 87.4% probability of achieving B_{MSY} , or
- C. T_{target} of 10 years, rebuilding by 2031, at $F_{rebuild}$ of $75\%F_{MSY} = 0.126$, which results in a 81.7% probability of achieving B_{MSY} .

Rationale: In March 2020, the Council was notified that the current rebuilding strategy had not resulted in adequate progress towards rebuilding. Projections suggest that white hake can rebuild in 5 years (by 2026) at $50\%F_{MSY}$ or 7 years (by 2028) at $75\%F_{MSY}$, with a 50 percent probability of achieving SSB_{MSY} . Additional factors were considered in determining T_{target} . Fishing mortality of zero for white hake is unrealistic given the multispecies nature of the groundfish fishery. Therefore, consistent with NS1, additional factors were included in the development of these options. First, this stock has exhibited below average recruitment in recent years, and recruitment may not increase suddenly to the average values, as is assumed in the rebuilding projections. Second, based on experience with groundfish projections, concerns remain that long term projections tend to be overly optimistic such that future levels of biomass are overestimated, and fishing mortality is underestimated. The 10-year options would result in a greater probability of achieving rebuilding by the target date, than a rebuilding strategy with T_{target} less than 10 years and are justified based on these concerns.

4.3 ACTION 1 – SPECIFICATIONS

4.3.1 Alternative 1 - No Action

Under Alternative 1 (No Action), there would be no changes to the specifications for FY2021 (Table 6). Default specifications for Eastern GB cod, Eastern GB haddock, GOM winter, SNE/MA winter, redfish, ocean pout, and wolffish would be in effect from May 1, 2021, to July 31, 2021, and would equal 35% of the FY2020 catch limits. All other stocks have FY2021 specifications adopted in FW59. There would be no new FY2021 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 (as provided in Table 7 and Table 8), and therefore updated Canadian quotas would not be accounted. These quotas are specified annually.

Rationale: The No Action alternative uses OFLs/ABCs/ACLs adopted in FW59. These values are based on previous assessments. However, more recent assessments for several of the groundfish stocks occurred in 2020.

Table 6 - Alternative 1/No Action - Northeast Multispecies OFLs, ABC, ACLs, and other ACL sub-components for FY2021-FY2022 (metric tons, live weight), adjusted for final sector 2020 rosters following the final rule for FW59, published July 30, 2020. Values are rounded to the nearest metric ton or tenth. Underlined stocks are subject to adjustments in 2021 and 2022 based on US/CA quotas, 2020 CA quotas were used to adjust in the interim. Stocks shaded in gray would be subject to default specifications in 2021.

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>	<u>2021</u>		1,291	19	142		1,073	1,072.7		1,041	31		1,234
	<u>2022</u>		1,291	19	142		1,073	1,072.7		1,041	31		1,234
GOM Cod	2021	929	552	48	7		468	275.3	193	267	9		523
	2022	1,150	552	48	7		468	275.3	193	267	9		523
<u>GB Haddock</u>	<u>2021</u>	116,883	76,537		383		70,892	70,892.4		69,465	1,428	1,424	72,699
	<u>2022</u>	114,925	75,056		375		69,521	69,520.6		68,120	1,400	1,396	71,292
GOM Haddock	2021	21,521	16,794	56	56		15,575	10,280.8	5,295	10,022	258	156	15,843
	2022	14,834	11,526	38	38		10,690	7,055.9	3,634	6,879	177	107	10,873
<u>GB Yellowtail Flounder*</u>	<u>2021</u>		120			19	95	95.4		92	3	2	116
SNE/MA Yellowtail Flounder	2021	71	22	0	4	2	15	15.4		12	3		21
	2022	184	22	0	4	2	15	15.4		12	3		21
CC/GOM Yellowtail Flounder	2021	1,076	823	58	41		688	688.0		656	32		787
	2022	1,116	823	58	41		688	688.0		656	32		787
American Plaice	2021	3,740	2,881	29	29		2,682	2,682.2		2,611	71		2,740
	2022	3,687	2,825	28	28		2,630	2,630.1		2,560	70		2,687

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
Witch Flounder	2021		1,483	44	59		1,310	1,310.2		1,275	35		1,414
	2022		1,483	44	59		1,310	1,310.2		1,275	35		1,414
GB Winter Flounder*	2021	944	561		22		522	522.4		502	21		545
	2022	1,590	561		22		522	522.4		502	21		545
GOM Winter Flounder	2021												
SNE/MA Winter Flounder	2021												
Redfish	2021												
White Hake*	2021	2,906	2,147	11	11		2,019	2,019.3		1,995	24		2,041
	2022	2,986	2,147	11	11		2,019	2,019.3		1,995	24		2,041
Pollock	2021	28,475	22,062	882	882		19,282	19,282.2		19,092	190		21,047
	2022	21,744	16,812	672	672		14,694	14,693.7		14,549	145		16,039
Northern Windowpane Flounder	2021	84	59	1	5	12	38	38.4			38		55
	2022	84	59	1	5	12	38	38.4			38		55
Southern Windowpane Flounder	2021	568	426	26	196	143	48	47.5			48		412
	2022	568	426	26	196	143	48	47.5			48		412
Ocean Pout	2021												
Atlantic Halibut*	2021		106	21	4		77	76.5			77		102
	2021		106	21	4		77	76.5			77		102

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
Atlantic Wolffish	2021												

4.3.2 Alternative 2 – Revised Specifications

Under Alternative 2, the annual specifications for FY2021 – FY2022 for GB cod, GOM cod, GB haddock, GOM haddock, GB yellowtail flounder, SNE/MA yellowtail flounder, CC/GOM yellowtail flounder, American plaice, witch flounder white hake, and pollock and FY2021-FY2023 for GB winter flounder, GOM winter flounder, SNE/MA winter flounder, redfish, northern windowpane flounder, and southern windowpane flounder, ocean pout, Atlantic halibut, and Atlantic wolffish would be as specified as in Table 9. Alternative 2 includes adjustments to the state waters and other sub-component values from those specified in FW59 (see Appendix II). All other specifications would remain unchanged from those adopted through FW59.

U.S./Canada Total Allowable Catches

This alternative would specify total allowable catches (TACs) for the U.S./Canada Management Area for FY2021 for Eastern GB cod, Eastern GB haddock, and GB yellowtail flounder as indicated in Table 7. If NMFS determines that FY2020 catch of GB cod, haddock, or yellowtail flounder from the U.S./Canada Management Area exceeded the respective 2020 TAC, the U.S./Canada Resource Sharing Understanding and the regulations require that the 2021 TAC be reduced by the amount of the overage. Any overage reduction would be applied to the components of the fishery that caused the overage of the U.S. TAC in 2020. To minimize any disruption to the fishing industry, NMFS would attempt to make any necessary TAC adjustment in the first quarter of the fishing year.

A comparison of the proposed FY2021 U.S. TACs and the FY2020 U.S. TACs is shown in Table 8. Changes to the U.S. TACs reflect changes to the percentage shares, stock status, and the Transboundary Management Guidance Committee’s (TMGC) recommendations.

Table 7 - Proposed FY2021 U.S./Canada TACs (mt).

	Eastern GB Cod	Eastern GB Haddock	GB Yellowtail Flounder
Total Shared TAC	635	14,100	125
U.S. TAC	190.5	6,486	80
Canada TAC	444.5	7,614	45

Table 8 - Comparison of the Proposed FY2021 U.S. TACs and the FY2020 U.S. TACs (mt).

Stock	U.S. TAC		Percent Change ((FY2021-FY2020) /FY2020)*100
	FY2021	FY2020	
Eastern GB cod	190.5	188.5	+1.1%
Eastern GB haddock	6,486	16,200	-60%
GB yellowtail flounder	80	120	-33%

Table 9- Alternative 2 Revised Northeast Multispecies OFLs, ABC, ACLs, and other ACL sub-components for FY2021-FY2023 (metric tons, live weight), based on final 2020 sector rosters. Values are rounded to the nearest metric ton or tenth. Underlined stocks are subject to adjustments in 2022 based on US/CA quotas, 2021 CA quotas were used to adjust in the interim. Includes adjustments for Canadian catches (*), and state waters component and other sub-component for most stocks. Specifications in gray are unadjusted from FW59.

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>	2021		1,308	20	137		1,093	1,093.1		1,061	32		1,250
	<u>2022</u>		1,308	20	137		1,093	1,093.1		1,061	32		1,250
GOM Cod	2021	929	552	48	12		463	270.4	193	262	8.6		523
	2022	1,150	552	48	12		463	270.4	193	262	8.6		523
<u>GB Haddock</u>	2021	116,883	82,723		414		76,622	76,622.2		75,079	1,543	1,539	78,574
	<u>2022</u>	114,925	81,242		406		75,250	75,250.4		73,735	1,516	1,511	77,168
GOM Haddock	2021	21,521	16,794	56	56		15,575	10,280.8	5,295	10,022	258	156	15,843
	2022	14,834	11,526	38	38		10,690	7,055.9	3,634	6,879	177	107	10,873
<u>GB Yellowtail Flounder*</u>	2021		80			12	64	63.6		61	2.3	1.5	78
	<u>2022</u>		80			12	64	63.6		61	2.3	1.5	78
SNE/MA Yellowtail Flounder	2021	71	22	0.2	3.3	2.0	16	15.6		13	2.9		21
	2022	184	22	0.2	3.3	2.0	16	15.6		13	2.9		21
CC/GOM Yellowtail Flounder	2021	1,076	823	58	37		692	691.9		660	32		787
	2022	1,116	823	58	37		692	691.9		660	32		787

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
American Plaice	2021	3,740	2,881	29	29		2,682	2,682.2		2,611	71		2,740
	2022	3,687	2,825	28	28		2,630	2,630.1		2,560	70		2,687
Witch Flounder	2021		1,483	44	52		1,317	1,317.3		1,282	36		1,414
	2022		1,483	44	52		1,317	1,317.3		1,282	36		1,414
GB Winter Flounder*	2021	865	608		27		563	563.2		541	22		591
	2022	974	608		27		563	563.2		541	22		591
	2023	1,431	608		27		563	563.2		541	22		591
GOM Winter Flounder	2021	662	497	194	7.5		281	280.9		267	14		482
	2022	662	497	194	7.5		281	280.9		267	14		482
	2023	662	497	194	7.5		281	280.9		267	14		482
SNE/MA Winter Flounder	2021	1,438	456	21	132		288	288.1		254	34		441
	2022	1,438	456	21	132		288	288.1		254	34		441
	2023	1,438	456	21	132		288	288.1		254	34		441
Redfish	2021	13,519	10,186				9,677	9,676.7		9,550	126		9,677
	2022	13,354	10,062				9,559	9,558.9		9,434	125		9,559
	2023	13,229	9,967				9,469	9,468.7		9,345	124		9,469
White Hake*	2021	2,906	2,147	11	11		2,019	2,019.3		1,995	24		2,041
	2022	2,986	2,147	11	11		2,019	2,019.3		1,995	24		2,041