Amendment 25 (Revised)

to the

Northeast Multispecies Fishery Management Plan

Appendix III

Development of Phase 1 Measures for Atlantic Cod Management Transition Plan: Bridge Approach for Sector Allocation

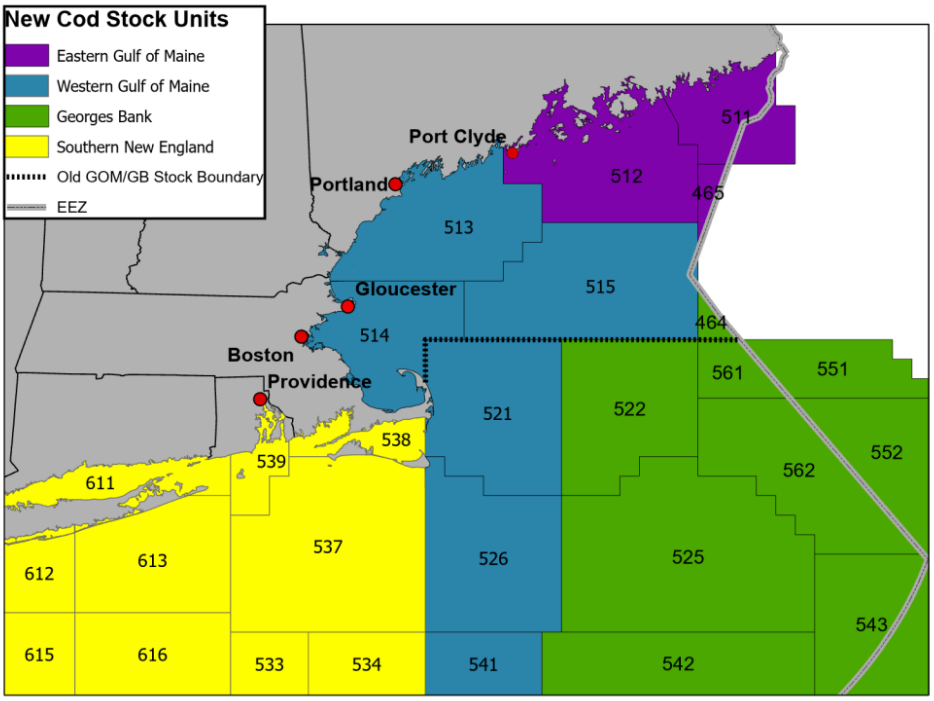
This appendix describes the development of the Council's "bridge approach" for sector allocations for Phase 1 of the Atlantic cod management transition plan. The Groundfish Committee (Committee) and Council developed the bridge approach throughout Framework 69 development, including Committee tasking for the Groundfish Plan Development Team (PDT), consideration of PDT analyses, and Committee decision making. The Committee and Council intended the bridge approach as a short-term approach for Phase 1 of the transition plan in order to have necessary management measures in place for May 1, 2025, while Phase 2 of the transition plan will consider longer-term approaches to addressing sector allocation. Phase 1 measures were not implemented by May 1, 2025, due to delays in the regulatory process[1] and NOAA's disapproval of Amendment 25[2]. However, the Council's intent and rationale for the short-term bridge approach still applies for Phase 1 measures, now with a target of May 1, 2026. This appendix provides illustrative examples to demonstrate other approaches that were considered and how these informed the Council's final selected approach.

Council's proposed approach:

Under Phase 1 of the Council's Atlantic Cod Management Transition Plan, the Council's proposed approach maintains existing potential sector contributions (PSCs) as the basis for allocating to the commercial fishery, applying the two existing cod PSCs to annual catch entitlements (ACEs) for the four proposed stocks. This approach necessitates an apportionment of the Western Gulf of Maine (WGOM) cod commercial sub-ABC, because the northern statistical areas of the WGOM (North) are based on GOM PSCs and the southern statistical areas of the WGOM (South) are based on GB PSCs (Figure 1). The Council selected a WGOM apportionment split of 68:32 (North:South), which is based on catch history from a subset of years that account for large differences in quotas between the GOM and GB stocks. This choice was intended to minimize the potential for historical commercial sub-ACLs to have an outsized effect on the relative catch in the two old stock areas.

[1] https://www.fisheries.noaa.gov/bulletin/emergency-measures-northeast-multispecies-fishery-fishing-year-2025?utm_medium=email&utm_source=govdelivery
[2] https://d23h0vhsm26o6d.cloudfront.net/20250515-A25-Council-Decision-Letter-0648-XE237-v2-Signed.pdf

Figure 1- Stock areas for the four new Atlantic cod stock units. Existing GOM/GB stock boundary shown for reference.



Development of sector PSC approach:

In November 2023, the Committee tasked the PDT with conducting analyses to inform development of the Atlantic cod management transition plan[3]. As part of the response to this tasking, the PDT prepared a "base case" scenario, which uses the same sector PSC qualifying years originally used in Amendment 16 and applies permit landings history from the statistical areas that comprise the four new cod stock units to re-calculate each limited access permit's PSC for the four new cod stock areas (See March 14, 2024 PDT memo). Based on feedback from the public and industry, the Committee decided not to pursue the base case for Phase 1 of the transition plan as this was deemed too large of an allocation change at this time and warranted further consideration in the longer-term Phase 2. It chose to instead move forward with an approach that maintains the existing two cod PSCs.

At the time the base case was introduced to the Committee, 2025 quotas for the new cod stocks were not yet available. Below is an illustrative example to demonstrate how sector allocations under the base case would have compared to the method developed for FW69, *i.e.*, how do total

[3] See November 13, 2023 Joint Groundfish Committee, Groundfish Advisory Panel, and Recreational Advisory Panel meeting summary: https://www.nefmc.org/library/nov-13-2023-joint-groundfish-committee-advisory-panel-and-recreational-advisory-panel-meeting-summary

cod allocations (mt) for each sector differ between the two methods, using the quotas originally developed in FW69.

Table 1: Illustrative example demonstrating the difference in the amount (mt) of cod that would have been allocated to each sector under the Base Case and FW 69 methods. The difference in the total cod allocated is shown as both actual and absolute values.

	Base Case: 4 PSCs and 4 commercial sub-ABC's				FW 69 Method: 2 PSCs and 4 commercial sub-ABC's				Base Case vs FW69: Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**EGOM**	**WGOM**	**GB**	**SNE**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.76	21.14	2.58	0.14	0.33	9.98	8.04	0.46	-5.81	5.81
Maine Coast Community Sector	15.91	21.52	2.04	0.10	7.46	29.31	1.62	0.09	-1.10	1.10
Maine Permit Bank	0.25	1.58	0.19	0.01	0.55	2.14	0.10	0.01	0.77	0.77
Mooncusser Sector	0.48	33.13	1.16	0.30	2.96	20.97	9.21	0.53	-1.40	1.40
NEFS 2	4.90	46.81	8.43	0.51	12.79	55.29	7.41	0.42	15.26	15.26
NEFS 4	3.34	29.25	3.41	0.04	5.29	26.62	6.51	0.37	2.75	2.75
NEFS 5	0.00	0.83	0.18	0.45	0.16	0.95	0.35	0.02	0.01	0.01
NEFS 6	0.00	0.72	0.60	0.00	0.08	0.73	0.40	0.02	-0.08	0.08
NEFS 8	6.79	41.40	31.79	1.00	3.03	37.58	24.21	1.38	-14.78	14.78
NEFS 10	0.12	2.71	0.02	0.02	0.85	3.29	0.13	0.01	1.41	1.41
NEFS 11	1.62	15.64	0.02	0.03	5.38	20.18	0.30	0.02	8.55	8.55
NEFS 12	0.86	6.12	0.15	0.01	1.75	7.01	0.50	0.03	2.16	2.16
NEFS 13	0.71	7.10	14.32	0.68	0.26	9.75	8.05	0.46	-4.30	4.30
NH Permit Bank	0.05	1.51	0.00	0.00	0.54	2.01	0.00	0.00	1.00	1.00
Sustainable Harvest Sector 1	6.08	15.07	6.90	0.13	3.30	17.61	4.97	0.28	-2.02	2.02
Sustainable Harvest Sector 2	3.16	4.17	1.41	0.04	0.80	4.39	1.32	0.08	-2.19	2.19
Sustainable Harvest Sector 3	1.20	0.31	0.00	0.00	0.09	0.39	0.06	0.00	-0.97	0.97
Common Pool	1.06	7.79	2.21	0.83	1.68	8.61	2.21	0.13	0.73	0.73
Sum	47.3	256.8	75.4	4.3	47.3	256.8	75.4	4.3		65.29

Development of commercial allocation approach:

In March 2024, the Committee next tasked the PDT with developing methods for "prorating commercial sub-ACLs from the four new stocks to the two existing stocks." The PDT provided a possible method (Option 1) that addressed the Committee's tasking (which would result in quotas for GOM and GB cod) and identified for consideration an alternative method (Option 2) that would result in quotas for EGOM, WGOM, GB, and SNE cod (See June 5, 2024 PDT memo). Given a number of challenges identified with Option 1, the PDT recommended Option 2 as a better solution for preventing overfishing and achieving the Committee's intent that the Phase 1 bridge approach does not reallocate PSCs. At their June 11th meeting, the Committee recommended moving forward with Option 2 as the approach for allocating to sectors. Allocating four stocks of cod from the two existing PSCs was considered the best way to "minimize disruptions to the fishery" during the cod transition[4].

Applying the two existing cod PSCs to four cod stocks requires an apportionment of the WGOM, since a portion of the statistical areas belong to the existing GOM stock area and a portion to the existing GB area. The PDT identified several options for the basis of the apportionment, including historical catch, survey biomass, or a combination, and documented tradeoffs with

[4] See June 11, 2025 Groundfish Committee meeting summary: https://d23h0vhsm26o6d.cloudfront.net/240611_Groundfish_Committee_Meeting_Summary_FINAL.pdf

each. The PDT discussed, but did not further pursue, the idea to base the apportionment on historic quotas because past quotas for the GOM and GB stock areas have not been directly reflective of past fishing activity within the two portions of the WGOM area.

The 2024 cod assessments were conducted on four stocks. The results of these assessments indicated that the total amount of cod across all stock areas was approximately 50 percent lower than the 2024 quotas. This made comparisons between the previous and revised stock structures challenging.

Below is an illustrative example to demonstrate how sector allocations that were in place in 2024 under two stocks ("status quo") would have compared to the method developed for FW69 for allocating four stocks, i.e., how do total cod allocations for each sector differ between the two methods, using the quotas in place in FY2024. To create this example, we calculated the percent of the total amount of cod that each of the four stocks contributed (per FW69), and applied that percentage to the total amount of the two cod stocks in FY2024. For instance, in FW69, the commercial sub-ABC of WGOM cod was 67 percent of the total amount of cod. This 67 percent was applied to the total amount of commercial sub-ABC in 2024 (702.6 mt) to result in the hypothetical total of 470 mt of WGOM cod, and then distributed between sectors based on PSCs using the method used in FW69.

Table 2: Illustrative example demonstrating the difference in the amount (mt) of cod that was allocated to sectors for 2 stocks in 2024 to the amount of cod that would have been allocated to each sector in 2024 under the 4-stock scenario developed in FW69. Allocations are calculated using the Fishing Year 2024 quota and sector rosters. The difference in the total cod allocated is shown as both actual and absolute values.

	FW69 Method: 2 PSC and 4 hypothetical commercial sub-ABC's					"Status Quo" 2 PSC and 2 actual (2024) commercial sub-ABC's			FW69 vs 2024 "Status Quo": Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**Total Cod**	**GOM**	**GB**	**Total Cod**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.60	18.27	14.72	0.84	34.43	2.06	43.34	45.40	-10.97	10.97
Maine Coast Community Sector	13.66	53.66	2.96	0.17	70.44	46.73	8.71	55.44	15.00	15.00
Maine Permit Bank	1.01	3.92	0.19	0.01	5.12	3.44	0.55	3.99	1.13	1.13
Mooncusser Sector	5.42	38.38	16.86	0.96	61.63	18.54	49.64	68.18	-6.56	6.56
NEFS 2	23.41	101.22	13.56	0.77	138.96	80.09	39.92	120.01	18.95	18.95
NEFS 4	9.68	48.72	11.91	0.68	71.00	33.12	35.07	68.19	2.81	2.81
NEFS 5	0.28	1.74	0.63	0.04	2.69	0.97	1.86	2.84	-0.14	0.14
NEFS 6	0.15	1.34	0.74	0.04	2.27	0.50	2.17	2.67	-0.40	0.40
NEFS 8	5.55	68.80	44.33	2.53	121.20	18.98	130.51	149.49	-28.29	28.29
NEFS 10	1.56	6.01	0.24	0.01	7.83	5.33	0.71	6.04	1.79	1.79
NEFS 11	9.84	36.94	0.55	0.03	47.36	33.67	1.62	35.29	12.07	12.07
NEFS 12	3.21	12.84	0.92	0.05	17.02	10.97	2.71	13.68	3.34	3.34
NEFS 13	0.48	17.85	14.74	0.84	33.91	1.65	43.39	45.05	-11.14	11.14
NH Permit Bank	1.00	3.68	0.00	0.00	4.68	3.41	0.00	3.41	1.27	1.27
Sustainable Harvest Sector 1	6.04	32.23	9.10	0.52	47.90	20.67	26.80	47.47	0.42	0.42
Sustainable Harvest Sector 2	1.46	8.03	2.42	0.14	12.06	5.00	7.14	12.13	-0.08	0.08
Sustainable Harvest Sector 3	0.16	0.72	0.11	0.01	1.00	0.56	0.33	0.88	0.12	0.12
Common Pool	3.07	15.76	4.05	0.23	23.11	10.51	11.93	22.44	0.67	0.67
Sum	86.6	470.1	138.0	7.9	702.6	296.2	406.4	702.6		115.15

It is important to note that this comparison using 2024 quotas reflects a snapshot in time. The same analysis, applied to FY2022 quotas, has different results (see below), because the total

amount of quota and the balance between GOM and GB cod is different. The PDT found that the results also change if the proportions of the four stocks shift (not shown).

Table 3: Illustrative example demonstrating the difference in the amount (mt) of cod that was allocated to sectors for 2 stocks in 2022 to the amount of cod that would have been allocated to each sector in 2022 under the 4-stock scenario developed in FW69. Allocations are calculated using the Fishing Year 2022 quota and Fishing Year 2024 rosters. The difference in the total cod allocated is shown as both actual and absolute values.

	FW69 Method: 2 PSC and 4 hypothetical commercial sub-ABC's					"Status Quo" 2 PSC and 2 actual (2022) commercial sub-ABC's			FW69 vs 2022 "Status Quo": Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**Total Cod**	**GOM**	**GB**	**Total Cod**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.46	14.07	11.33	0.65	26.51	1.98	27.38	29.36	-2.86	2.86
Maine Coast Community Sector	10.52	41.31	2.28	0.13	54.23	44.82	5.50	50.32	3.91	3.91
Maine Permit Bank	0.77	3.01	0.14	0.01	3.94	3.30	0.35	3.64	0.29	0.29
Mooncusser Sector	4.17	29.55	12.98	0.74	47.44	17.78	31.37	49.15	-1.71	1.71
NEFS 2	18.03	77.92	10.44	0.60	106.98	76.82	25.22	102.05	4.94	4.94
NEFS 4	7.45	37.51	9.17	0.52	54.66	31.76	22.16	53.93	0.73	0.73
NEFS 5	0.22	1.34	0.49	0.03	2.07	0.93	1.18	2.11	-0.04	0.04
NEFS 6	0.11	1.03	0.57	0.03	1.74	0.48	1.37	1.85	-0.10	0.10
NEFS 8	4.27	52.96	34.12	1.95	93.31	18.21	82.47	100.67	-7.37	7.37
NEFS 10	1.20	4.63	0.19	0.01	6.03	5.11	0.45	5.56	0.47	0.47
NEFS 11	7.58	28.44	0.42	0.02	36.46	32.30	1.02	33.32	3.14	3.14
NEFS 12	2.47	9.88	0.71	0.04	13.10	10.52	1.71	12.23	0.87	0.87
NEFS 13	0.37	13.74	11.35	0.65	26.10	1.58	27.42	29.00	-2.90	2.90
NH Permit Bank	0.77	2.84	0.00	0.00	3.60	3.27	0.00	3.27	0.33	0.33
Sustainable Harvest Sector 1	4.65	24.81	7.01	0.40	36.87	19.83	16.94	36.76	0.11	0.11
Sustainable Harvest Sector 2	1.12	6.19	1.87	0.11	9.28	4.79	4.51	9.30	-0.02	0.02
Sustainable Harvest Sector 3	0.13	0.56	0.09	0.00	0.77	0.53	0.21	0.74	0.03	0.03
Common Pool	2.36	12.13	3.12	0.18	17.79	10.08	7.54	17.62	0.18	0.18
Sum	66.7	361.9	106.3	6.1	540.9	284.1	256.8	540.9		29.99

The PDT looked at the same analysis conducted under different historic rosters and found that while there would be shifts to individual sectors, the summed absolute value change between rosters was not meaningful.

Development of WGOM apportionment method:

The Committee recommended basing WGOM apportionment on catch history.[5] The PDT provided an analysis in response, demonstrating that using the average percentage split of commercial catches from fishing years 2010-2023 results in an apportionment of 55% North: 45% South (See September 5, 2024 PDT memo). The Committee was then interested in exploring an alternative apportionment based on catch that accounts for past quota differences and tasked the PDT with analyzing a 75:25 (North:South) split compared to a 55:45 split.[6] The PDT analyzed these options and offered other options for the basis of the apportionment split from the Committee's motion (See October 23, 2024 PDT memo). The PDT provided an analysis that showed how total cod allocations change by sector for a 55:45 vs 75:25 (North:South)

[5] June 11, 2025 Groundfish Committee meeting

[6] See September 11, 2025 Groundfish Committee meeting summary: https://www.nefmc.org/library/sep-11-2024-groundfish-committee-meeting-summary

apportionment split. One of the options the PDT provided was a modification of the Committee's motion for 75:25, which bases the apportionment on a different subset of years to account for differences in quotas between GOM and GB. This option resulted in 68:32 (North:South) split, which the Committee and Council selected as preferred. The Committee also tasked the PDT with analyzing separate North WGOM and South WGOM sub-ACLs. The PDT provided analyses and considerations (in the October 23, 2024 PDT memo), and ultimately the Committee did not propose separate WGOM sub-ACLs.[7]

In July and August 2025, the PDT expanded previous analyses to further illustrate the changes in sector allocations under different methods, and using a constant "status quo" quota (*e.g.* the quotas from FY2024). The PDT provides the following examples of the analysis under different North:South splits for WGOM (68:32, 55:45, and 45:55). 68:32 and 55:45 were options considered by the Committee and Council, and 45:55 provides an illustrative comparison of a different apportionment split.

Table 4: Illustrative example demonstrating the difference in the amount (mt) of cod that was allocated to sectors for 2 stocks in 2024 to the amount of cod that would have been allocated to each sector under the 4-stock scenario developed in FW69 using an apportionment ratio of 68:32 (North:South) for the WGOM stock. Allocations are calculated using the Fishing Year 2024 quota and sector rosters. The difference in the total cod allocated under each scenario is shown as both actual and absolute values.

	68:32 FW69 Method: 2 PSC and 4 hypothetical commercial sub-ABC's					"Status Quo" 2 PSC and 2 actual (2024) commercial sub-ABC's			68:32 FW69 vs "Status Quo": Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**Total Cod**	**GOM**	**GB**	**Total Cod**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.60	18.27	14.72	0.84	34.43	2.06	43.34	45.40	-10.97	10.97
Maine Coast Community Sector	13.66	53.66	2.96	0.17	70.44	46.73	8.71	55.44	15.00	15.00
Maine Permit Bank	1.01	3.92	0.19	0.01	5.12	3.44	0.55	3.99	1.13	1.13
Mooncusser Sector	5.42	38.38	16.86	0.96	61.63	18.54	49.64	68.18	-6.56	6.56
NEFS 2	23.41	101.22	13.56	0.77	138.96	80.09	39.92	120.01	18.95	18.95
NEFS 4	9.68	48.72	11.91	0.68	71.00	33.12	35.07	68.19	2.81	2.81
NEFS 5	0.28	1.74	0.63	0.04	2.69	0.97	1.86	2.84	-0.14	0.14
NEFS 6	0.15	1.34	0.74	0.04	2.27	0.50	2.17	2.67	-0.40	0.40
NEFS 8	5.55	68.80	44.33	2.53	121.20	18.98	130.51	149.49	-28.29	28.29
NEFS 10	1.56	6.01	0.24	0.01	7.83	5.33	0.71	6.04	1.79	1.79
NEFS 11	9.84	36.94	0.55	0.03	47.36	33.67	1.62	35.29	12.07	12.07
NEFS 12	3.21	12.84	0.92	0.05	17.02	10.97	2.71	13.68	3.34	3.34
NEFS 13	0.48	17.85	14.74	0.84	33.91	1.65	43.39	45.05	-11.14	11.14
NH Permit Bank	1.00	3.68	0.00	0.00	4.68	3.41	0.00	3.41	1.27	1.27
Sustainable Harvest Sector 1	6.04	32.23	9.10	0.52	47.90	20.67	26.80	47.47	0.42	0.42
Sustainable Harvest Sector 2	1.46	8.03	2.42	0.14	12.06	5.00	7.14	12.13	-0.08	0.08
Sustainable Harvest Sector 3	0.16	0.72	0.11	0.01	1.00	0.56	0.33	0.88	0.12	0.12
Common Pool	3.07	15.76	4.05	0.23	23.11	10.51	11.93	22.44	0.67	0.67
Sum	86.6	470.1	138.0	7.9	702.6	296.2	406.4	702.6		115.15

[7] See October 29, 2025 Groundfish Committee meeting summary: https://d23h0vhsm26o6d.cloudfront.net/241029_Groundfish_CMTE_Meeting_Summary_FINAL.pdf

Table 5: Illustrative example demonstrating the difference in the amount (mt) of cod that was allocated to sectors for 2 stocks in 2024 to the amount of cod that would have been allocated to each sector under the 4-stock scenario developed in FW69 using an apportionment ratio of 55:45 (North:South) for the WGOM stock. Allocations are calculated using the Fishing Year 2024 quota and sector rosters. The difference in the total cod allocated under each scenario is shown as both actual and absolute values.

	55:45 FW69 Method: 2 PSC and 4 hypothetical commercial sub-ABC's					"Status Quo" 2 PSC and 2 actual (2024) commercial sub-ABC's			55:45 FW69 vs "Status Quo": Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**Total Cod**	**GOM**	**GB**	**Total Cod**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.60	24.36	14.72	0.84	40.52	2.06	43.34	45.40	-4.88	4.88
Maine Coast Community Sector	13.66	45.32	2.96	0.17	62.11	46.73	8.71	55.44	6.67	6.67
Maine Permit Bank	1.01	3.29	0.19	0.01	4.49	3.44	0.55	3.99	0.50	0.50
Mooncusser Sector	5.42	42.02	16.86	0.96	65.27	18.54	49.64	68.18	-2.92	2.92
NEFS 2	23.41	90.70	13.56	0.77	128.44	80.09	39.92	120.01	8.43	8.43
NEFS 4	9.68	47.17	11.91	0.68	69.44	33.12	35.07	68.19	1.25	1.25
NEFS 5	0.28	1.82	0.63	0.04	2.77	0.97	1.86	2.84	-0.06	0.06
NEFS 6	0.15	1.56	0.74	0.04	2.49	0.50	2.17	2.67	-0.18	0.18
NEFS 8	5.55	84.50	44.33	2.53	136.91	18.98	130.51	149.49	-12.58	12.58
NEFS 10	1.56	5.02	0.24	0.01	6.84	5.33	0.71	6.04	0.79	0.79
NEFS 11	9.84	30.24	0.55	0.03	40.66	33.67	1.62	35.29	5.37	5.37
NEFS 12	3.21	10.98	0.92	0.05	15.16	10.97	2.71	13.68	1.49	1.49
NEFS 13	0.48	24.03	14.74	0.84	40.09	1.65	43.39	45.05	-4.95	4.95
NH Permit Bank	1.00	2.98	0.00	0.00	3.98	3.41	0.00	3.41	0.56	0.56
Sustainable Harvest Sector 1	6.04	32.00	9.10	0.52	47.66	20.67	26.80	47.47	0.19	0.19
Sustainable Harvest Sector 2	1.46	8.08	2.42	0.14	12.10	5.00	7.14	12.13	-0.03	0.03
Sustainable Harvest Sector 3	0.16	0.66	0.11	0.01	0.94	0.56	0.33	0.88	0.05	0.05
Common Pool	3.07	15.38	4.05	0.23	22.74	10.51	11.93	22.44	0.30	0.30
Sum	86.6	470.1	138.0	7.9	702.6	296.2	406.4	702.6		51.21

Table 6: Illustrative example demonstrating the difference in the amount (mt) of cod that was allocated to sectors for 2 stocks in 2024 to the amount of cod that would have been allocated to each sector under the 4-stock scenario developed in FW69 using an apportionment ratio of 45:55 (North:South) for the WGOM stock. Allocations are calculated using the Fishing Year 2024 quota and sector rosters. The difference in the total cod allocated under each scenario is shown as both actual and absolute values.

	45:55 FW69 Method: 2 PSC and 4 hypothetical commercial sub-ABC's					"Status Quo" 2 PSC and 2 actual (2024) commercial sub-ABC's			45:55 FW69 vs "Status Quo": Change in total cod	
Sector Name	**EGOM**	**WGOM**	**GB**	**SNE**	**Total Cod**	**GOM**	**GB**	**Total Cod**	**Difference**	**Absolute Difference**
Fixed Gear Sector	0.60	29.05	14.72	0.84	45.21	2.06	43.34	45.40	-0.19	0.19
Maine Coast Community Sector	13.66	38.92	2.96	0.17	55.70	46.73	8.71	55.44	0.26	0.26
Maine Permit Bank	1.01	2.80	0.19	0.01	4.01	3.44	0.55	3.99	0.02	0.02
Mooncusser Sector	5.42	44.82	16.86	0.96	68.07	18.54	49.64	68.18	-0.12	0.12
NEFS 2	23.41	82.60	13.56	0.77	120.35	80.09	39.92	120.01	0.33	0.33
NEFS 4	9.68	45.97	11.91	0.68	68.24	33.12	35.07	68.19	0.05	0.05
NEFS 5	0.28	1.88	0.63	0.04	2.83	0.97	1.86	2.84	-0.00	0.00
NEFS 6	0.15	1.74	0.74	0.04	2.66	0.50	2.17	2.67	-0.01	0.01
NEFS 8	5.55	96.59	44.33	2.53	148.99	18.98	130.51	149.49	-0.50	0.50
NEFS 10	1.56	4.26	0.24	0.01	6.07	5.33	0.71	6.04	0.03	0.03
NEFS 11	9.84	25.08	0.55	0.03	35.50	33.67	1.62	35.29	0.21	0.21
NEFS 12	3.21	9.56	0.92	0.05	13.74	10.97	2.71	13.68	0.06	0.06
NEFS 13	0.48	28.79	14.74	0.84	44.85	1.65	43.39	45.05	-0.20	0.20
NH Permit Bank	1.00	2.44	0.00	0.00	3.44	3.41	0.00	3.41	0.02	0.02
Sustainable Harvest Sector 1	6.04	31.82	9.10	0.52	47.48	20.67	26.80	47.47	0.01	0.01
Sustainable Harvest Sector 2	1.46	8.11	2.42	0.14	12.13	5.00	7.14	12.13	0.00	0.00
Sustainable Harvest Sector 3	0.16	0.61	0.11	0.01	0.89	0.56	0.33	0.88	0.00	0.00
Common Pool	3.07	15.09	4.05	0.23	22.45	10.51	11.93	22.44	0.01	0.01
Sum	86.6	470.1	138.0	7.9	702.6	296.2	406.4	702.6		2.03

As mentioned above, the results of these analysis change if compared to a different “status quo” year.

New England Fishery Management Council
50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492
Eric Reid, *Chair* | Cate O'Keefe, PhD, *Executive Director*

Corrected 4/11/24

MEMORANDUM

DATE: March 14, 2024

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: Atlantic Cod Management Transition Plan Supporting Analysis - Update

The Groundfish Plan Development Team (PDT) met as a sub-group on February 23, 2024, and as a whole on March 7, and March 11, 2024, to continue discussing the Atlantic Cod Management Transition Plan analysis, including: 1) commercial and recreational fishery data, 2) the 'base case' scenario for calculating Potential Sector Contributions (PSCs) and re-assigning PSCs to new stock areas, and 3) a draft 'roadmap' of fishery management plan changes.

Background

At their November 13th, 2023 meeting, the Groundfish Committee (Committee) passed the following motion:

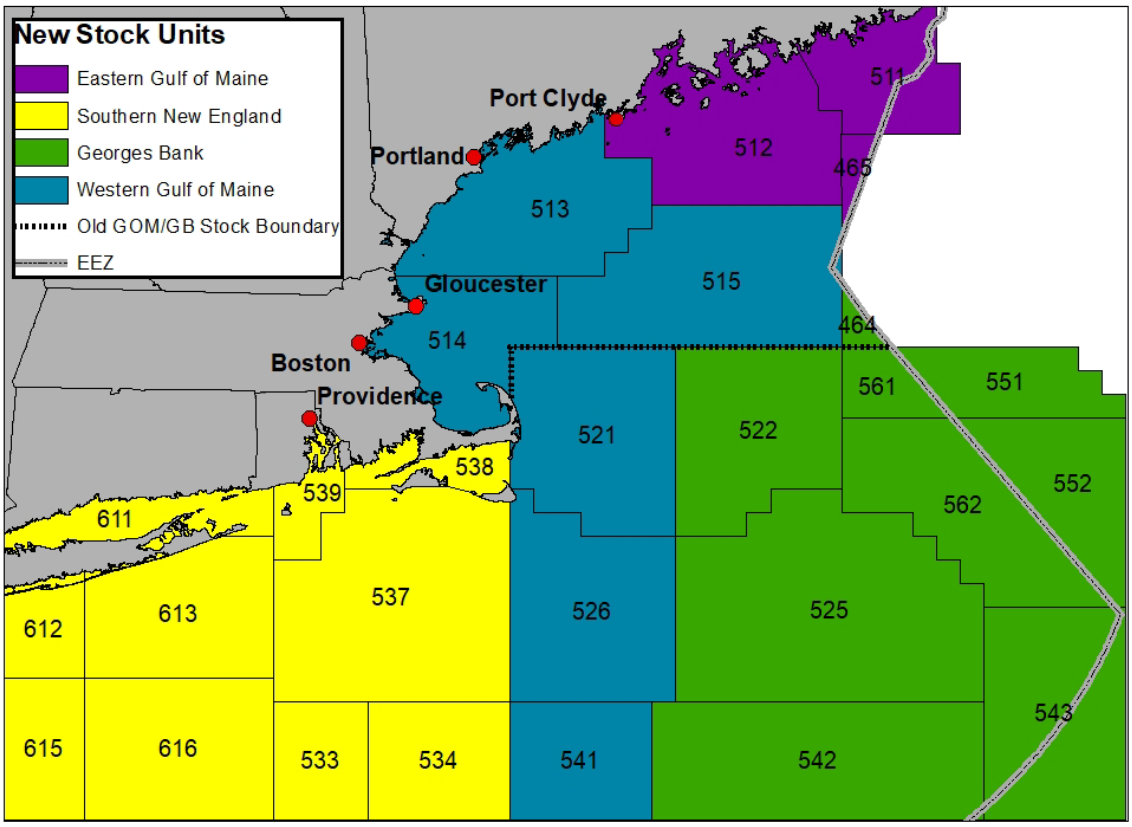
> *The Committee recommends that the PDT conduct the following analyses to inform Council decision-making with respect to the Atlantic cod transition plan:*
>
> *1. Total cod catch (landings and discards) across the statistical areas that make up the two stock areas previously used for management (GOM and GB) and statistical areas that make up four stock areas identified through the cod stock structure work (EGOM, WGOM, Georges Bank and Southern New England).*
>
> *2. Total cod catch (landings and discards) from the previous Georges Bank stock area and the amount of catch (by weight and percentage of total) coming from statistical areas 521 and 526.*
>
> *3. Commercial/recreational split of cod catch across the four stock areas.*
>
> *4. Number of commercial vessels and homeport of vessels landing more than 1,000 pounds of cod per year.*
>
> *For each analysis above, the following timeframes should be analyzed:*
>
> *1. 1996-2006 (sector qualifying period following A16)*
>
> *2. 1996-2003 (pre-sector management time period)*
>
> *3. 2010-2022 (the sector time period)*

4. 2010-2015 (shorter sector time period)
5. 2001-2006 (the time period for calculating the recreational and commercial share of the GOM cod ACL)

The PDT previously provided an update on analysis in response to the motion.[1] This included initial considerations outlined for the analysis, and two appendices including Appendix 1 - Number of permits by port and states with landings of 1,000 pounds or more of cod, which addresses analysis #4 in the motion. The PDT also discussed plans to prepare a 'base case' scenario which will use the same permit landings history time period (1996-2006) used to determine PSCs in Amendment 16 to calculate the current PSCs to individual statistical areas and then, using these values, re-assign PSCs to the newly identified four stock areas.

Commercial and Recreational Fishery Data

The figure below provides the new stock unit boundaries for the four new cod stocks along with the previous GOM/GB stock boundary outlined for reference. Note that Canadian catch is only included in the GB cod assessment.



[1] 240119 GF PDT memo to CTME re Atlantic Cod Transition Plan Update: https://d23h0vhsm26o6d.cloudfront.net/5_240119-GF-PDT-memo-to-CMTE-re-Atlantic-Cod-Transition-Plan-Update.pdf

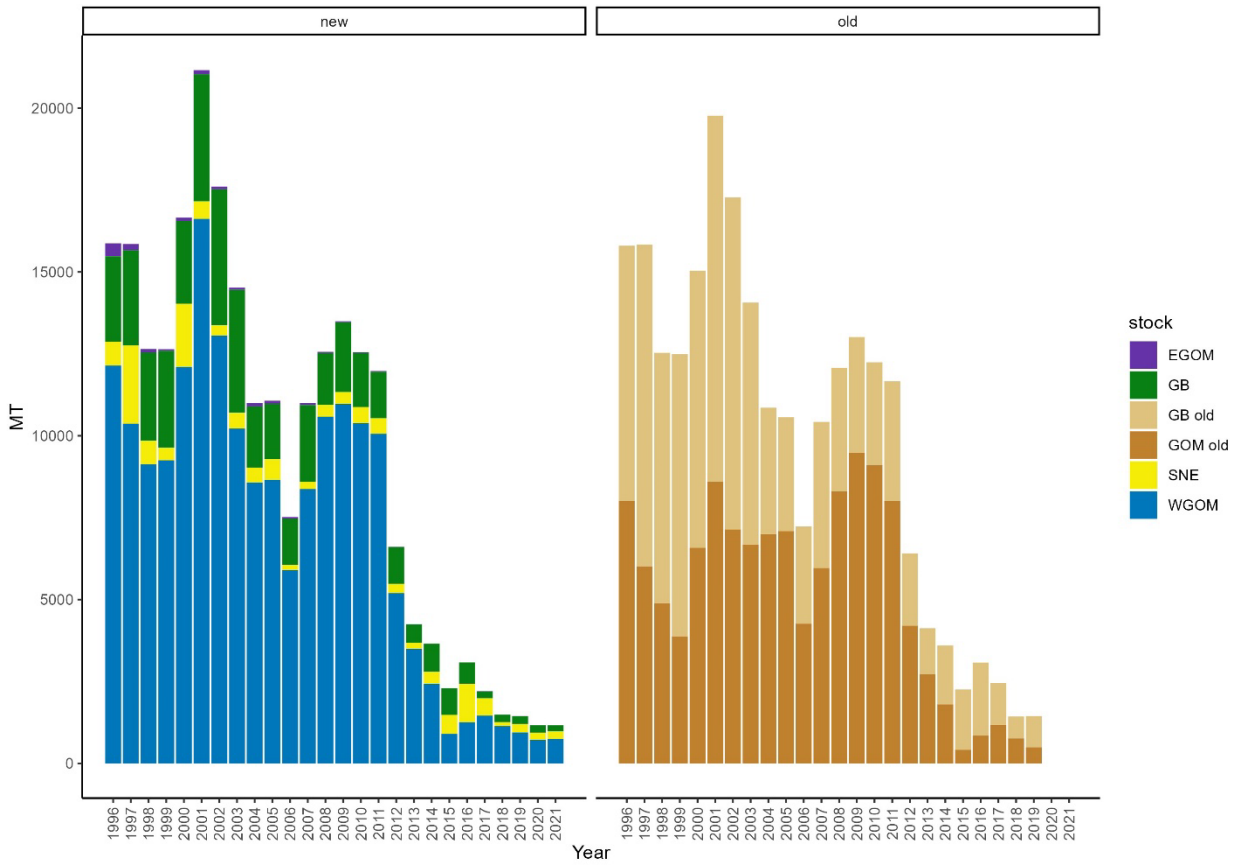
Analysis #1 - Total cod catch (landings and discards) across the statistical areas that make up the two stock areas previously used for management (GOM and GB) and statistical areas that make up four stock areas identified through the cod stock structure work (EGOM, WGOM, Georges Bank and Southern New England).

Data is compiled across the five timeframes outlined above and is included in Appendix 1.

Data on total catch across the current two stock areas is from the 2021 GOM and GB cod management track assessments with a terminal year of 2019. Data on total catch in the newly identified four stock areas (EGOM, WGOM, GB, and SNE) is from the Atlantic Cod Research Track Working Group Report with a terminal year of 2021.

The PDT notes that for this analysis, timeframe #3 ends with 2019, rather than 2022, for the existing GOM and GB stocks, to be consistent with the data used in the 2021 management track assessments, and 2021 for the four new stocks, to be consistent with the data used in the research track assessment. The 2024 management track assessments will use a terminal year of 2023, and these analyses could be updated at that time.

Total cod catch in the four new stock areas (left) and two old stock areas (right).

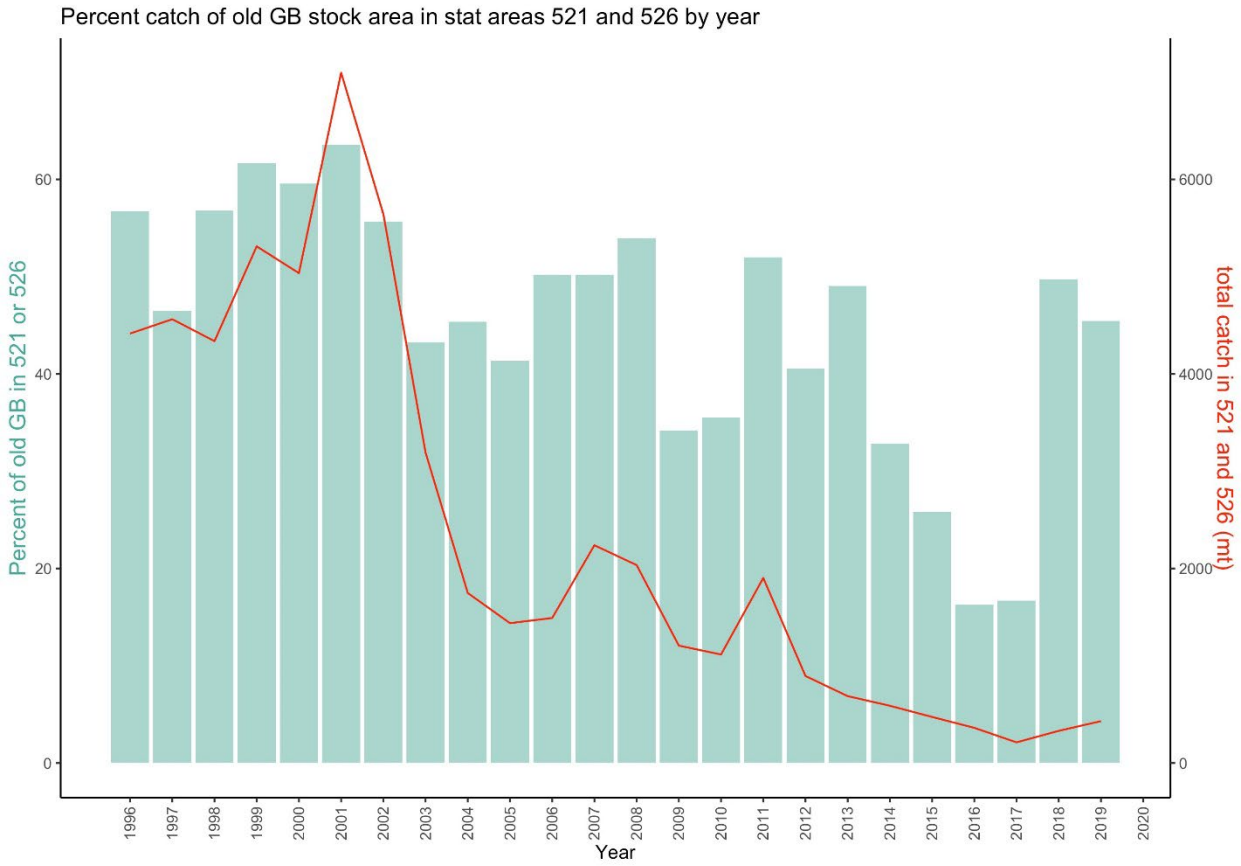


Analysis #2 - Total cod catch (landings and discards) from the previous Georges Bank stock area and the amount of catch (by weight and percentage of total) coming from statistical areas 521 and 526.

Data is compiled across the five timeframes outlined above and is included in Appendix 1.

Data on total catch from the previous GB stock area is from the 2021 GB management track assessment with a terminal year of 2019. Data on catch from statistical areas 521 and 526 is from the Atlantic Cod Research Track Working Group Report and MRIP.

The PDT notes that for this analysis, timeframe #3 ends with 2019, rather than 2022, to be consistent with the data used in the 2021 management track assessment.

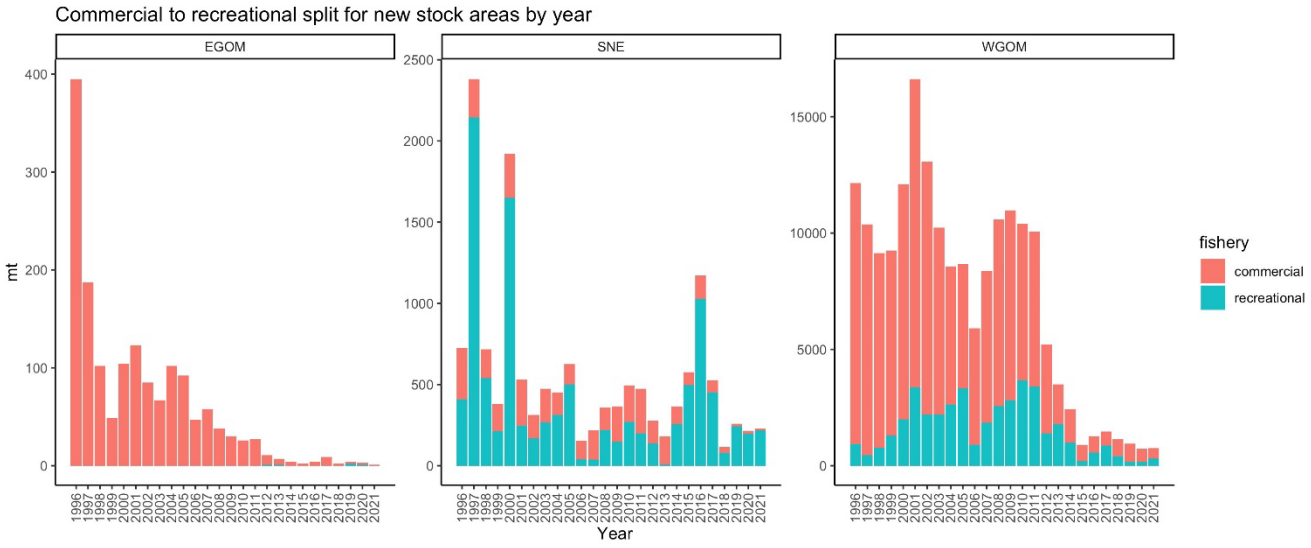


Analysis # 3 - Commercial/recreational split of cod catch across the four stock areas.

Data is compiled across the five timeframes outlined above and is included in Appendix 1.

Data on commercial and recreational catch across the four stock areas is from the Atlantic Cod Research Track Working Group Report with a terminal year of 2021.

The PDT notes that for this analysis, timeframe #3 ends with 2021, rather than 2022, to be consistent with the data used in the research track assessment. The 2024 management track assessments will use a terminal year of 2023, and these analyses could be updated at that time.



'Base Case' Scenario for PSC Calculations Reassigned to New Stock Areas

The PDT prepared a 'base case' scenario which uses the same permit landings history time period (1996-2006) used to determine PSCs in Amendment 16 for calculating the current PSCs to individual statistical areas and then re-assigned to the newly identified four stock areas. The 'base case' scenario for PSC calculations is included in Appendix 2.

The PSC calculations are based on landings only. The PDT previously noted that not all permits use landings history from 1996-2006 to calculate the PSC for each stock, as outlined in Amendment 16. For permits committed to one of two existing sectors as of March 1, 2008, the PSC for GB cod is based on the landings history for the period 1996-2001. The PSCs calculated in the 'base case' scenario are not what the existing PSCs are based on because the existing PSCs include the grandfathered cod landings, while these PSCs are all FY96-FY06.

Draft 'Roadmap' of Fishery Management Plan Changes

The PDT developed a draft outline of changes to the fishery management plan that includes the necessary steps and legal deadlines related to updating the management of Atlantic cod. This outlines the process moving forward and is intended to help provide guidance when determining which rulemaking process(es) to undertake in the future. The roadmap is included in the meeting materials for the March 19, 2024 Joint Recreational Advisory Panel/Groundfish Advisory Panel Meeting and March 20, 2024 Groundfish Committee Meeting[2].

[2] https://www.nefmc.org/calendar/mar-20-2024-groundfish-committee-meeting

Appendix 1 – Commercial and Recreational Fishery Data

Corrected 4/11/24

Analysis #1 –Total cod catch (landings and discards) across the statistical areas that make up the two stock areas previously used for management (GOM and GB) and statistical areas that make up four stock areas identified through the cod stock structure work (EGOM, WGOM, Georges Bank and Southern New England).

Data sources: 2021 GOM and GB cod management track assessments, Atlantic Cod Research Track Working Group Report

All Years

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
1996	8014	7785	395	12147	2604	727
1997	6015	9822	187	10374	2909	2382
1998	4894	7640	102	9133	2696	716
1999	3878	8614	49	9254	2959	380
2000	6581	8458	104	12106	2529	1921
2001	8600	11171	123	16623	3883	531
2002	7142	10134	85	13060	4150	313
2003	6686	7381	67	10223	3757	475
2004	7005	3854	102	8575	1869	451
2005	7088	3480	92	8658	1692	627
2006	4264	2970	47	5903	1415	153
2007	5966	4459	58	8376	2344	218
2008	8303	3773	38	10584	1583	358
2009	9485	3529	30	10971	2128	365
2010	9100	3144	26	10384	1652	494
2011	8007	3659	27	10063	1415	474
2012	4204	2209	11	5202	1124	276
2013	2723	1403	7	3499	565	182
2014	1806	1795	5	2434	855	364
2015	420	1838	2	906	812	576
2016	850	2227	4	1259	650	1172
2017	1177	1277	9	1463	207	527
2018	766	666	3	1143	230	116
2019	497	948	4	945	239	258
2020			3	723	227	214
2021			1	750	185	229

1996-2006

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
1996	8014	7785	395	12147	2604	727
1997	6015	9822	187	10374	2909	2382
1998	4894	7640	102	9133	2696	716
1999	3878	8614	49	9254	2959	380
2000	6581	8458	104	12106	2529	1921
2001	8600	11171	123	16623	3883	531
2002	7142	10134	85	13060	4150	313
2003	6686	7381	67	10223	3757	475
2004	7005	3854	102	8575	1869	451
2005	7088	3480	92	8658	1692	627
2006	4264	2970	47	5903	1415	153
mean	6378.818	7391.727	123	10550.55	2769.364	788.5384
median	6686	7785	102	10223	2696	530.7436
SD	1492.776	2791.51	98.03877	2846.986	898.5209	702.2428
min	3878	2970	47	5903	1415	153.0398
max	8600	11171	395	16623	4150	2381.539

1996-2003

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
1996	8014	7785	395	12147	2604	727
1997	6015	9822	187	10374	2909	2382
1998	4894	7640	102	9133	2696	716
1999	3878	8614	49	9254	2959	380
2000	6581	8458	104	12106	2529	1921
2001	8600	11171	123	16623	3883	531
2002	7142	10134	85	13060	4150	313
2003	6686	7381	67	10223	3757	475
mean	6476.25	8875.625	139	11615	3185.875	930.4166
median	6633.5	8536	103	11240	2934	623.1294
SD	1551.053	1359.668	111.413	2475.727	641.4133	777.0104
min	3878	7381	49	9133	2529	312.6566
max	8600	11171	395	16623	4150	2381.539

2010-2021

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
2010	9100	3144	26	10384	1652	494
2011	8007	3659	27	10063	1415	474
2012	4204	2209	11	5202	1124	276
2013	2723	1403	7	3499	565	182
2014	1806	1795	5	2434	855	364
2015	420	1838	2	906	812	576
2016	850	2227	4	1259	650	1172
2017	1177	1277	9	1463	207	527
2018	766	666	3	1143	230	116
2019	497	948	4	945	239	258
2020			3	723	227	214
2021			1	750	185	229
mean	2955	1916.6	8.5	3230.917	680.0833	406.8277
median	1491.5	1816.5	4.5	1361	607.5	319.9197
SD	3181.016	938.1032	8.888194	3527.615	505.8982	283.7127
min	420	666	1	723	185	115.9216
max	9100	3659	27	10384	1652	1171.794

2010-2015

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
2010	9100	3144	26	10384	1652	494
2011	8007	3659	27	10063	1415	474
2012	4204	2209	11	5202	1124	276
2013	2723	1403	7	3499	565	182
2014	1806	1795	5	2434	855	364
2015	420	1838	2	906	812	576
mean	4376.667	2341.333	13	5414.667	1070.5	394.3674
median	3463.5	2023.5	9	4350.5	989.5	418.8394
SD	3478.999	875.2514	10.86278	3980.672	407.0571	147.7807
min	420	1403	2	906	565	182.2941
max	9100	3659	27	10384	1652	575.9924

2001-2006

Year	GOM (old)	GB (old)	EGOM	WGOM	GB	SNE
2001	8600	11171	123	16623	3883	531
2002	7142	10134	85	13060	4150	313
2003	6686	7381	67	10223	3757	475
2004	7005	3854	102	8575	1869	451
2005	7088	3480	92	8658	1692	627
2006	4264	2970	47	5903	1415	153
mean	6797.5	6498.333	86	10507	2794.333	424.9117
median	7046.5	5617.5	88.5	9440.5	2813	463.003
SD	1408.985	3588.397	26.6233	3804.002	1258.864	168.3917
min	4264	2970	47	5903	1415	153.0398
max	8600	11171	123	16623	4150	627.0244

Analysis #2 - Total cod catch (landings and discards) from the previous Georges Bank stock area and the amount of catch (by weight and percentage of total) coming from statistical areas 521 and 526.

Data sources: 2021 GB cod management track assessment, Atlantic Cod Research Track Working Group Report, MRIP

All years

Year	GB (old)	521_526	%_521_526
1996	7785	4415	56.7%
1997	9822	4562	46.4%
1998	7640	4337	56.8%
1999	8614	5311	61.7%
2000	8458	5036	59.5%
2001	11171	7096	63.5%
2002	10134	5643	55.7%
2003	7381	3192	43.2%
2004	3854	1748	45.4%
2005	3480	1438	41.3%
2006	2970	1491	50.2%
2007	4459	2239	50.2%
2008	3773	2035	53.9%
2009	3529	1207	34.2%
2010	3144	1116	35.5%
2011	3659	1903	52.0%
2012	2209	895	40.5%
2013	1403	688	49.0%
2014	1795	589	32.8%
2015	1838	474	25.8%
2016	2227	362	16.3%
2017	1277	213	16.7%
2018	666	331	49.7%
2019	948	431	45.5%

1996-2006

Year	GB (old)	521_526	%_521_526
1996	7785	4415	56.7%
1997	9822	4562	46.4%
1998	7640	4337	56.8%
1999	8614	5311	61.7%
2000	8458	5036	59.5%
2001	11171	7096	63.5%
2002	10134	5643	55.7%
2003	7381	3192	43.2%
2004	3854	1748	45.4%
2005	3480	1438	41.3%
2006	2970	1491	50.2%
mean	7391.727	4024.455	0.527685
median	7785	4415	0.556838
SD	2791.51	1850.812	0.077699
min	2970	1438	0.413218
max	11171	7096	0.635216

1996-2003

Year	GB (old)	521_526	%_521_526
1996	7785	4415	56.7%
1997	9822	4562	46.4%
1998	7640	4337	56.8%
1999	8614	5311	61.7%
2000	8458	5036	59.5%
2001	11171	7096	63.5%
2002	10134	5643	55.7%
2003	7381	3192	43.2%
mean	8875.625	4949	0.554467
median	8536	4799	0.567393
SD	1359.668	1141.827	0.07109
min	7381	3192	0.432462
max	11171	7096	0.635216

2010-2019

Year	GB (old)	521_526	%_521_526
2010	3144	1116	35.5%
2011	3659	1903	52.0%
2012	2209	895	40.5%
2013	1403	688	49.0%
2014	1795	589	32.8%
2015	1838	474	25.8%
2016	2227	362	16.3%
2017	1277	213	16.7%
2018	666	331	49.7%
2019	948	431	45.5%
mean	1916.6	700.2	0.36376
median	1816.5	531.5	0.380061
SD	938.1032	503.5171	0.133346
min	666	213	0.162551
max	3659	1903	0.520087

2010-2015

Year	GB (old)	521_526	%_521_526
2010	3144	1116	35.5%
2011	3659	1903	52.0%
2012	2209	895	40.5%
2013	1403	688	49.0%
2014	1795	589	32.8%
2015	1838	474	25.8%
mean	2341.333	944.1667	0.392768
median	2023.5	791.5	0.380061
SD	875.2514	522.3269	0.09969
min	1403	474	0.257889
max	3659	1903	0.520087

2001-2006

Year	GB (old)	521_526	%_521_526
2001	11171	7096	63.5%
2002	10134	5643	55.7%
2003	7381	3192	43.2%
2004	3854	1748	45.4%
2005	3480	1438	41.3%
2006	2970	1491	50.2%
mean	6498.333	3434.667	0.498885
median	5617.5	2470	0.477787
SD	3588.397	2406.256	0.08457
min	2970	1438	0.413218
max	11171	7096	0.635216

Appendix 1 – Commercial and Recreational Fishery Data

Analysis # 3 - Commercial/recreational split of cod catch across the four stock areas.

Data sources: Atlantic Cod Research Track Working Group Report

All Years

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
1996	395	11221	319	0	926	408	100.0%	92.4%	43.9%
1997	187	9918	238	0	456	2144	100.0%	95.6%	10.0%
1998	102	8360	177	0	773	539	100.0%	91.5%	24.7%
1999	49	7957	168	0	1297	212	100.0%	86.0%	44.2%
2000	104	10108	272	0	1998	1649	100.0%	83.5%	14.2%
2001	123	13250	284	0	3373	247	100.0%	79.7%	53.5%
2002	85	10858	143	0	2202	170	100.0%	83.1%	45.7%
2003	67	8023	208	0	2200	267	100.0%	78.5%	43.8%
2004	102	5955	139	0	2620	312	100.0%	69.4%	30.8%
2005	92	5333	126	0	3325	501	100.0%	61.6%	20.1%
2006	47	5002	112	0	901	41	100.0%	84.7%	73.2%
2007	58	6528	179	0	1848	39	100.0%	77.9%	82.1%
2008	38	8021	138	0	2563	220	100.0%	75.8%	38.5%
2009	30	8149	217	0	2822	148	100.0%	74.3%	59.5%
2010	26	6708	224	0	3676	270	100.0%	64.6%	45.3%
2011	27	6662	275	0	3401	199	100.0%	66.2%	58.0%
2012	10	3807	137	1	1395	139	90.9%	73.2%	49.6%
2013	6	1709	174	1	1790	8	85.7%	48.8%	95.6%
2014	4	1447	107	0	987	257	100.0%	59.4%	29.4%
2015	2	703	79	0	203	497	100.0%	77.6%	13.7%
2016	4	691	144	0	568	1028	100.0%	54.9%	12.3%
2017	9	596	75	0	867	452	100.0%	40.7%	14.2%
2018	2	743	37	0	400	79	100.0%	65.0%	31.9%
2019	2	783	15	2	162	243	50.0%	82.9%	5.8%
2020	2	548	17	1	175	197	66.7%	75.8%	7.9%
2021	1	444	12	0	306	217	100.0%	59.2%	5.2%

1996-2006

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
1996	395	11221	319	0	926	408	100.0%	92.4%	43.9%
1997	187	9918	238	0	456	2144	100.0%	95.6%	10.0%
1998	102	8360	177	0	773	539	100.0%	91.5%	24.7%
1999	49	7957	168	0	1297	212	100.0%	86.0%	44.2%
2000	104	10108	272	0	1998	1649	100.0%	83.5%	14.2%
2001	123	13250	284	0	3373	247	100.0%	79.7%	53.5%
2002	85	10858	143	0	2202	170	100.0%	83.1%	45.7%
2003	67	8023	208	0	2200	267	100.0%	78.5%	43.8%
2004	102	5955	139	0	2620	312	100.0%	69.4%	30.8%
2005	92	5333	126	0	3325	501	100.0%	61.6%	20.1%
2006	47	5002	112	0	901	41	100.0%	84.7%	73.2%
mean	123	8725.909	198.7273	0	1824.636	590	1	0.823731	0.367309
median	102	8360	177	0	1998	312	1	0.834958	0.437895
SD	98.03877	2623.86	70.45153	0	1025.311	670.8196	0	0.100031	0.187838
min	47	5002	112	0	456	41	1	0.615962	0.099916
max	395	13250	319	0	3373	2144	1	0.956044	0.732026

1996-2003

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
1996	395	11221	319	0	926	408	100.0%	92.4%	43.9%
1997	187	9918	238	0	456	2144	100.0%	95.6%	10.0%
1998	102	8360	177	0	773	539	100.0%	91.5%	24.7%
1999	49	7957	168	0	1297	212	100.0%	86.0%	44.2%
2000	104	10108	272	0	1998	1649	100.0%	83.5%	14.2%
2001	123	13250	284	0	3373	247	100.0%	79.7%	53.5%
2002	85	10858	143	0	2202	170	100.0%	83.1%	45.7%
2003	67	8023	208	0	2200	267	100.0%	78.5%	43.8%
2004	102	5955	139	0	2620	312	100.0%	69.4%	30.8%
2005	92	5333	126	0	3325	501	100.0%	61.6%	20.1%
2006	47	5002	112	0	901	41	100.0%	84.7%	73.2%
mean	123	8725.909	198.7273	0	1824.636	590	1	0.823731	0.367309
median	102	8360	177	0	1998	312	1	0.834958	0.437895
SD	98.03877	2623.86	70.45153	0	1025.311	670.8196	0	0.100031	0.187838
min	47	5002	112	0	456	41	1	0.615962	0.099916
max	395	13250	319	0	3373	2144	1	0.956044	0.732026

2010-2021

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
2010	26	6708	224	0	3676	270	100.0%	64.6%	45.3%
2011	27	6662	275	0	3401	199	100.0%	66.2%	58.0%
2012	10	3807	137	1	1395	139	90.9%	73.2%	49.6%
2013	6	1709	174	1	1790	8	85.7%	48.8%	95.6%
2014	4	1447	107	0	987	257	100.0%	59.4%	29.4%
2015	2	703	79	0	203	497	100.0%	77.6%	13.7%
2016	4	691	144	0	568	1028	100.0%	54.9%	12.3%
2017	9	596	75	0	867	452	100.0%	40.7%	14.2%
2018	2	743	37	0	400	79	100.0%	65.0%	31.9%
2019	2	783	15	2	162	243	50.0%	82.9%	5.8%
2020	2	548	17	1	175	197	66.7%	75.8%	7.9%
2021	1	444	12	0	306	217	100.0%	59.2%	5.2%
mean	7.916667	2070.083	108	0.416667	1160.833	298.8333	0.911075	0.640293	0.307606
median	4	763	93	0	717.5	230	1	0.648019	0.218136
SD	9.139906	2344.312	85.78832	0.668558	1223.248	267.2424	0.163733	0.123132	0.273347
min	1	444	12	0	162	8	0.5	0.407382	0.052402
max	27	6708	275	2	3676	1028	1	0.828571	0.956044

2010-2015

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
2010	26	6708	224	0	3676	270	100.0%	64.6%	45.3%
2011	27	6662	275	0	3401	199	100.0%	66.2%	58.0%
2012	10	3807	137	1	1395	139	90.9%	73.2%	49.6%
2013	6	1709	174	1	1790	8	85.7%	48.8%	95.6%
2014	4	1447	107	0	987	257	100.0%	59.4%	29.4%
2015	2	703	79	0	203	497	100.0%	77.6%	13.7%
mean	12.5	3506	166	0.333333	1908.667	228.3333	0.961039	0.649786	0.48619
median	8	2758	155.5	0	1592.5	228	1	0.654012	0.474909
SD	11.16692	2669.428	73.75636	0.516398	1370.199	162.5591	0.062554	0.101887	0.279124
min	2	703	79	0	203	8	0.857143	0.488425	0.137153
max	27	6708	275	1	3676	497	1	0.775938	0.956044

2001-2006

	Commercial			Recreational			% Commercial		
Year	EGOM	WGOM	SNE	EGOM	WGOM	SNE	EGOM	WGOM	SNE
2001	123	13250	284	0	3373	247	100.0%	79.7%	53.5%
2002	85	10858	143	0	2202	170	100.0%	83.1%	45.7%
2003	67	8023	208	0	2200	267	100.0%	78.5%	43.8%
2004	102	5955	139	0	2620	312	100.0%	69.4%	30.8%
2005	92	5333	126	0	3325	501	100.0%	61.6%	20.1%
2006	47	5002	112	0	901	41	100.0%	84.7%	73.2%
mean	86	8070.167	168.6667	0	2436.833	256.3333	1	0.761845	0.445132
median	88.5	6989	141	0	2411	257	1	0.790944	0.447382
SD	26.6233	3346.179	65.45125	0	913.1067	152.9597	0	0.089154	0.183802
min	47	5002	112	0	901	41	1	0.615962	0.200957
max	123	13250	284	0	3373	501	1	0.847366	0.732026

FY24 Percent PSCs by Sector

New Cod Management Areas
Base Case: Using FY96-06 Cod Landings History

Sector	CODGOME_ 2024	CODGOMW _2024	CODGB _2024	CODSNE _2024
FGS	1.6%	8.7%	2.0%	2.8%
MCCS	33.6%	8.5%	2.7%	2.4%
MOON	1.1%	12.4%	1.7%	7.2%
MPB	0.5%	0.6%	0.3%	0.1%
NEFS 2	7.2%	15.5%	6.9%	9.2%
NEFS 4	7.1%	10.2%	4.5%	0.8%
NEFS 5	0.0%	0.3%	0.3%	10.5%
NEFS 6	3.1%	2.6%	3.9%	1.9%
NEFS 8	5.6%	7.5%	20.6%	14.5%
NEFS 10	1.1%	1.7%	0.2%	0.5%
NEFS 11	3.4%	6.1%	0.0%	0.7%
NEFS 12	1.0%	2.0%	0.0%	0.2%
NEFS 13	1.5%	3.5%	22.1%	16.2%
NHPB	0.1%	0.6%	0.0%	0.0%
SHS1	11.2%	5.5%	9.4%	2.1%
SHS2	8.9%	2.1%	3.0%	1.0%
SHS3	10.6%	8.9%	19.8%	9.1%
CP	2.2%	3.2%	2.6%	20.6%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Existing Cod Management Areas
Based on Existing Landings Histories

Sector	GOMCOD _2024	GBCOD _2024	Count of MRIs
FGS	0.6%	11.6%	61
MCCS	15.8%	2.3%	106
MOON	6.4%	12.2%	50
MPB	1.2%	0.1%	11
NEFS 2	24.0%	6.4%	113
NEFS 4	11.2%	7.4%	57
NEFS 5	0.3%	0.5%	18
NEFS 6	2.7%	3.0%	19
NEFS 8	2.7%	15.5%	67
NEFS 10	2.5%	0.5%	29
NEFS 11	11.4%	0.4%	41
NEFS 12	3.0%	0.5%	19
NEFS 13	0.6%	12.4%	67
NHPB	1.2%	0.0%	4
SHS1	5.9%	6.8%	50
SHS2	1.9%	2.6%	24
SHS3	4.8%	15.0%	44
CP	3.8%	2.8%	483
Total	**100.0%**	**100.0%**	**1263**

Historical Cod Landed, FY96-FY06
Current Active MRIs Only

	CODGOME	CODGOMW	CODGB	CODSNE	**Grand Total**
Live MT	1,374.4	76,242.5	28,297.0	1,272.3	**107,186.1**
Percent of Total	1.3%	71.1%	26.4%	1.2%	**100.0%**

	GOMCOD	GBCOD	**Grand Total**
Live MT	39,053.7	68,132.4	**107,186.1**
Percent of Total	36.4%	63.6%	**100.0%**

Source: dealer, VTR, and MRI databases
Run dates: 1/24/24 and 2/2/24
Greater Atlantic Regional Fisheries Office
March 8, 2024

New England Fishery Management Council
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Eric Reid, *Chair* | Cate O'Keefe, PhD, *Executive Director*

MEMORANDUM

DATE: June 5, 2024

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: Atlantic Cod Management Transition Plan – Options for Prorating Catch Limits and Analysis Update

The Groundfish Plan Development Team (PDT) met as a sub-group on April 11, and May 15, 2024, and as a whole on June 3, 2024, to continue discussing the Atlantic Cod Management Transition Plan analysis, including: 1) developing options for prorating commercial and recreational sub-ACLs from the four new stocks to the two existing stocks, 2) commercial and recreational fishery data, and 3) an updated 'base case' scenario for calculating Potential Sector Contributions (PSCs) and re-assigning PSCs to new stock areas.

Background

At their March 20, 2024, meeting, the Groundfish Committee (Committee) passed the following motions:

> *Task the PDT to consider methods to prorate commercial sub-ACLs from the four new stocks to the two existing stocks. As a part of this, calculate in the new WGOM area what percentage of commercial cod catch, separated by sector vs common pool when appropriate, came from stat areas 521, 526, and 541 from a) 1996-2006, b) 2010-2021, c) 2001-2006.*
>
> *Move to task the PDT with first developing the option to consider new management units for the recreational fishery* and second exploring options for how to prorate recreational sub-ACLs from the four new stocks to the two existing stocks. As a part of this, calculate in the new WGOM what percentage of recreational cod catch came from SRA 521, 526, and 541 during a) 2001-2006 and b) 2010-2021.*

* In April, the Council passed a motion outlining its initial approach for the Atlantic cod management transition plan which removed recreational management units and recreational/commercial allocation splits from Phase 1 (measures for May 1, 2025).

In this memorandum, the PDT provides a possible method (Option 1) that responds to the tasking from the Committee, as well as fishery data in response to these requests (provided later in the memorandum along with other fishery data analysis).

However, as the PDT worked on developing this method, it developed an alternative (Option 2) that the PDT believes would be a better solution. This alternative would result in quotas being set, monitored, and managed for four areas that match the four new stock units used in the assessments: Western Gulf of Maine (WGOM), Eastern Gulf of Maine (EGOM), Georges Bank (GB) and Southern New England (SNE). It would not revise the existing Potential Sector Contributions (PSCs) for the previous two units Gulf of Maine (GOM) cod and Georges Bank (GB) cod. The PDT believes this alternative achieves the Committee's goal for a bridge method that does not reallocate PSCs, while still preventing overfishing.

Options for Setting Commercial Fishery Sub-ACLs

1) **Option 1: Set quotas for two stocks**

- Set quotas for and allocate two stocks in two areas, GOM and GB, for all commercial and recreational fishing.
- Apportion WGOM, and combine the northern portion of the WGOM stock (statistical areas 513, 514, and 515) with EGOM (statistical areas 511, 512, and 465) to make a GOM cod TAC; and the southern portion of the WGOM stock (statistical areas 521, 526, and 541) with GB (statistical areas 646, 522, 525, 542, 543, 551, 552, 561, and 562) and SNE (statistical areas 533, 534, 537, 538, 539, 611, 612, 613, 615, and 616) to make a GB cod TAC.
- Sector and common pool allocations would be calculated using existing GOM and GB PSCs.
- Sets up GOM and GB TACs as proxies for the quotas for four new stocks.
- The Magnuson Stevens Act would still require ACLs to be established for each cod stock in the FMP (EGOM, WGOM, GB, SNE), and to be monitored to ensure overfishing would not be allowed.
- This option is less transparent for industry and would require more backend accounting. There would be two sets of numbers, the GOM and GB TACs allocated to the fishery, and the EGOM, WGOM, GB, SNE ACLs that cannot be exceeded.
- In-season monitoring and management would be necessary to ensure the four ACLs are not exceeded
    - *e.g.* "No more than *x* amount of the GOM TAC can be caught in EGOM," similar to EGB management
    - If GARFO is monitoring the four new stock ACLs in the background, sectors/sector managers would likely also need to monitor and manage their catch in the four areas matching the four new cod stocks in the FMP.
    - The regulatory authority for the common pool is not flexible enough to allow for the management of two sets of numbers. The Regional Administrator has only two authorities to take in-season action to manage the common pool, with specific requirements that must be reached before they can be carried out:

- A requirement to implement a closure of the common pool if catch reaches 90 percent of a Trimester Total Allowable Catch for a stock (derived from the common pool sub-ACL for that stock); and
- An authority to adjust trip limits should catch of a particular stock in the common pool be projected to exceed or underharvest the common pool sub-ACL for that stock.

2) Option 2: Set quota for four stocks

- Set quotas for and allocate four stocks in four areas (EGOM, WGOM, GB, SNE), consistent with the new stock units and assessments.
- Allocations of those stocks to sectors and the common pool would use the existing GOM and GB PSCs.
    - EGOM allocations would be calculated using GOM PSCs.
    - WGOM would be apportioned between North (statistical areas 513, 514, and 515) and South (statistical areas 521, 526, and 541). GOM PSCs would be used to allocate a portion of the North TAC and GB PSCs would be used to allocate a portion of the South TAC to each sector and common pool. The resulting pounds would be combined to create a WGOM sector ACEs and common pool sub-ACL, which can be fished throughout the WGOM area.
    - GB allocations would be based on GB PSCs.
        - Under the new stock areas, statistical area 464 moves from the current GOM area to the new GB. Historically, there has been minimal fishing effort in this area relative to overall catch. While it is possible to implement an apportionment (similar to the division between North and South WGOM), the PDT recommends not trying to account for this relatively small change.
    - SNE allocations would be based on GB PSCs.
- Easier to manage and ensure that ACLs are not exceeded while also more straightforward for industry to track, because the quotas for the four stocks would be the only numbers that are monitored and managed for accountability. No background calculation would be needed as in Option 1.
- Accountability measures would need to be described for the 4 stocks. This would not necessarily require new AMs, but analysis would need to describe how current AMs for GOM and GB would be appropriate for the four stocks.
- For the common pool, we would need to determine how to divide the common pool sub-ACL into trimester TACs, which could simply rely on the current division used for GOM and GB, as appropriate, or be further refined. Trimester TAC areas would need to be identified for EGOM and SNE and confirmed for WGOM and GB.

Amendment 18 accumulation limits - The PDT notes an issue raised previously related to the accumulation limits set by Amendment 18. Amendment 18 limited the average of all allocated groundfish stocks PSCs that may be held by an entity to no more than 15.5 percent. At the current 15 groundfish stocks, the total PSC across all stocks used by an individual or entity must be equal to or less than 232.5. The amendment specified that if additional groundfish stocks are

allocated (or unallocated) to sectors, the number would change by 15.5 per stock. The PDT interprets that this would only need to be addressed if reassigning PSCs to the four new stock units. The PDT will continue to consider the requirements and implications of Amendment 18 and how they impact increasing the management units of Atlantic cod.

Sub-component analysis – The PDT will need to develop a basis for establishing sub-components for the four new cod stock units. This could be based on catch by statistical area, which is available via CAMS.

The PDT also briefly discussed an option that would require combining the catch limits for all four new cod stocks, and then apportioning out to the two previous stocks. This was deemed to be incredibly problematic for preventing overfishing and therefore was not pursued further.

Option 1

Stocks		ABC	Recreational	Commercial			
				State/other commercial estimates	GF Commercial	GF Commercial (ACE based on PSC)	
						Sectors	Common Pool
EGOM		From assessment	0% of ABC	sub-component analysis, based on catch by stat area (via CAMS)	GF comm GOM TAC	GOM PSC	GOM PSC
WGOM	NWGOM	% of WGOM from assessment	37.5% of ABC				
	SWGOM	% of WGOM from assessment	0% of ABC		GF comm GB TAC	GB PSC	GB PSC
GB		From assessment	0% of ABC				
SNE		From assessment	catch target or % of ABC				

Option 2

Stocks		ABC	Recreational	Commercial				
				State/other commercial estimates	GF Commercial	GF Commercial (ACE based on PSC)		
						Sectors	Common Pool	
EGOM		From assessment	0% of ABC	sub-component analysis, based on catch by stat area (via CAMS)	ABC minus recreational and subs-components	GOM PSC	GOM PSC	
WGOM	NWGOM	% of WGOM from assessment	37.5% of ABC			GOM PSC	GOM PSC	ACEs combine into WGOM allocation
	SWGOM	% of WGOM from assessment	0% of ABC			GB PSC	GB PSC	
GB		From assessment	0% of ABC			GB PSC	GB PSC	
SNE		From assessment	catch target or % of ABC			GB PSC	GB PSC	

What information should the apportionment be based on?

The PDT also discussed different options for apportioning the North and South portions of WGOM, regardless of the proration approach taken, based on either:

1) Recent historic catch
2) Survey biomass
3) Combination of recent catch history and survey biomass (a weighting scheme)

The PDT discussed that a combination approach may be too complex to develop under the timeline. For a recent catch history approach, the PDT recommends consideration of the most recent ten years.

The PDT considered the tradeoffs between recent historic catch and survey biomass approaches

- Recent historic catch: Historic catch influenced by differences in ACLs between the GOM and GB stock areas
- Survey biomass: Survey strata don't align well with statistical areas of 521, 526

The PDT noted they could see what spatial allocation method is being developed for Eastern GB cod and Eastern GB haddock management units and use the same or similar method. This method will be peer reviewed.

Use of Atlantic Cod Management Strategy Evaluation (MSE) for testing options for prorating catch

The PDT discussed how the Atlantic Cod MSE framework that has been developed to simulate the updated understanding of cod stock structure could be used to test different options for prorating catch. This MSE framework was recently peer reviewed by a sub-panel of the SSC[1] and determined to be a good tool to use to meet the goal of the Council to understand the tradeoffs that they might expect from different configurations of management units for Atlantic cod and for setting catch advice for management units that have different boundaries than the stock assessment units. The PDT plans to work with the MSE project team to set up the management procedures (how the model emulates difference management scenarios) and then utilize the MSE to test proration options as these are identified and once outcomes of the June management track assessments and SSC recommendations are known. The MSE can be used to explore the different proration options outlined above, as well as different methods for apportioning out WGOM catch regardless of the proration option.

Options for Prorating Recreational Fishery Sub-ACLs

The PDT recommends that proration of recreational fishery sub-ACLs is not necessary under either Option 1 or Option 2. This is due to very low recreational catches of cod in statistical areas

[1] See Mar. 27, 2024 SSC Sub-panel Webinar - Calendar - NEFMC and sub-panel report: https://d23h0vhsm26o6d.cloudfront.net/2b.-240412-SSC-subpanel-memo-re-cod-MSE.pdf

521, 526, and 541 (Southern WGOM), the areas switching from the current Georges Bank stock unit to the new Western Gulf of Maine stock unit (see Appendix 2). When combined with no recreational catch data from the new GB stock area and very low catches in EGOM, this in effect means that the new SNE stock unit = the old GB unit and the Northern portion of the new WGOM stock unit = the old GOM stock unit.

Setting recreational measures - Under Option 1, it is unclear whether WGOM/EGOM would have the same set of measures, and SNE/GB the same. Under Option 2, it would be appropriate to have recreational measures for each stock area based on the existing recreational effort and new stock quotas.

The PDT reiterates a previous summary of the recreational data availability in the four Atlantic cod stock areas:

- EGOM: Marine Recreational Information Program (MRIP) data is highly variable with low precision and is generally insufficient for management.
- WGOM: There is generally high precision and ample MRIP data available for management.
- SNE: There is variable precision in MRIP data, and it is moderately sufficient for management. Most of the removals from this area have been from the recreational (not commercial) sector. However, a bioeconomic model for the new SNE cod stock area cannot be developed in time for this action.
- GB: The new GB cod stock area is entirely offshore and therefore has no MRIP sites associated with it. MRIP cannot be used to determine recreational catch. However, there does not appear to have been a recreational fishery active in the new GB cod stock area since the mid-2000s.

The PDT considered an SNE cod recreational catch target approach for FY2025-2027 vs allocation to the recreational fishery because of the magnitude of recreational catch in the new SNE stock area (in the most recent five-year period, recreational catch averages 87 percent of total catch)[2].

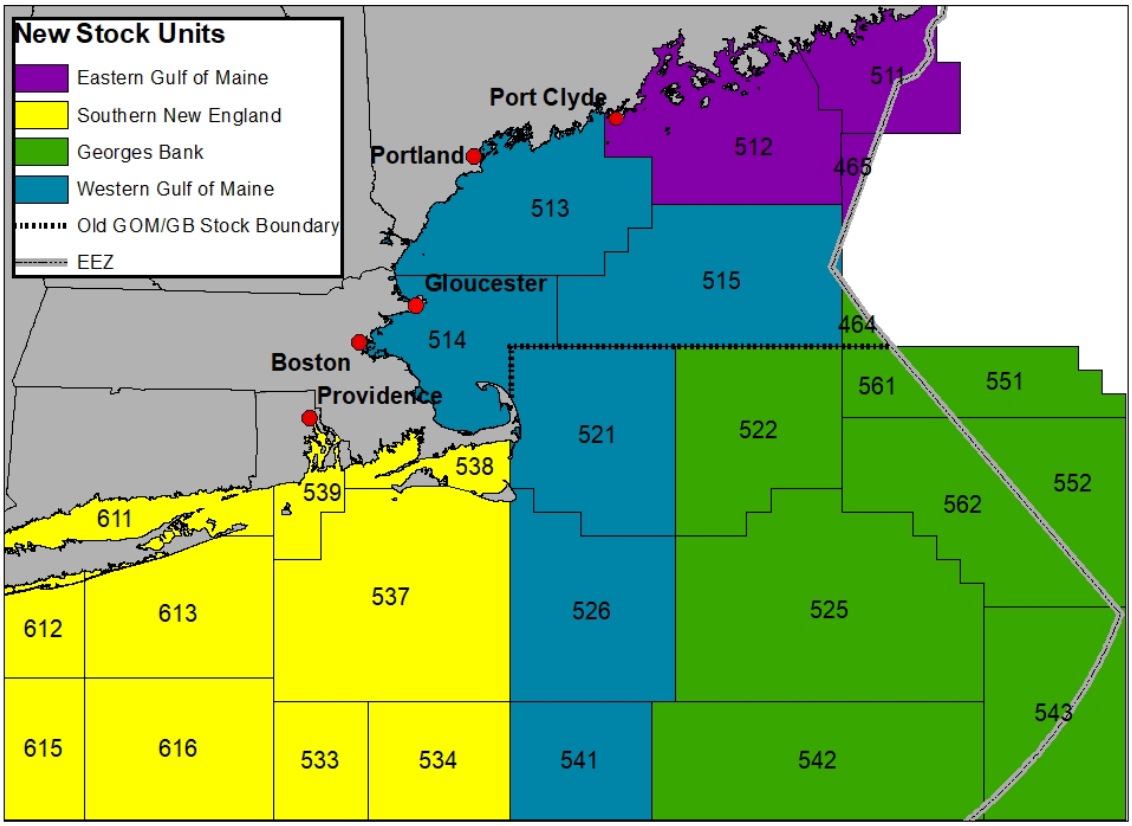
As noted previously, the recreational estimates of cod catch for recent years may change in the future, depending on the findings from the final Marine Recreational Information Program (MRIP) study Evaluating Measurement Error in the MRIP Fishing Effort Survey[3]. The earliest these updated estimates would be available is 2026. Any forthcoming amendment or framework on Atlantic cod management may want to build in a review of the final allocation between the commercial and recreational sectors that is triggered by the publication of the final MRIP report.

[2] See '240314 GF PDT memo to CTME re Atlantic Cod Transition Plan Update', Appendix 1: https://d23h0vhsm26o6d.cloudfront.net/4a_240314-GF-PDT-memo-to-CMTE-re-Atlantic-Cod-Transition-Plan-Update_with-appendices_revised-240411.pdf

[3] https://www.fisheries.noaa.gov/recreational-fishing-data/fishing-effort-survey-research-and-improvements#:%7E:text=%22Evaluating%20Measurement%20Error%20in%20the,was%20published%20in%20August%202023

Commercial and Recreational Fishery Data

The figure below provides the new stock unit boundaries for the four new cod stocks along with the previous GOM/GB stock boundary outlined for reference. Note that Canadian catch is only included in the GB cod assessment.



Analysis #1 - Percentage of commercial cod catch in the new WGOM stock area from statistical areas 521, 526, and 541 from a) 1996-2006, b) 2010-2021, c) 2001-2006.

Data is compiled across the three timeframes outlined above and is included in Appendix 1.

Data on total and commercial catch from the WGOM stock area and catch from statistical areas 521, 526, and 541 is from the Atlantic Cod Research Track Working Group Report with a terminal year of 2021.

The PDT notes that for this analysis, timeframe *b* ends with 2021, rather than 2022, to be consistent with the data used in the research track assessment. The 2024 management track assessments will use a terminal year of 2023, and these analyses could be updated at that time.

Figure 1. Percentage of total cod catch in the WGOM stock area from statistical areas 521, 526, and 541.

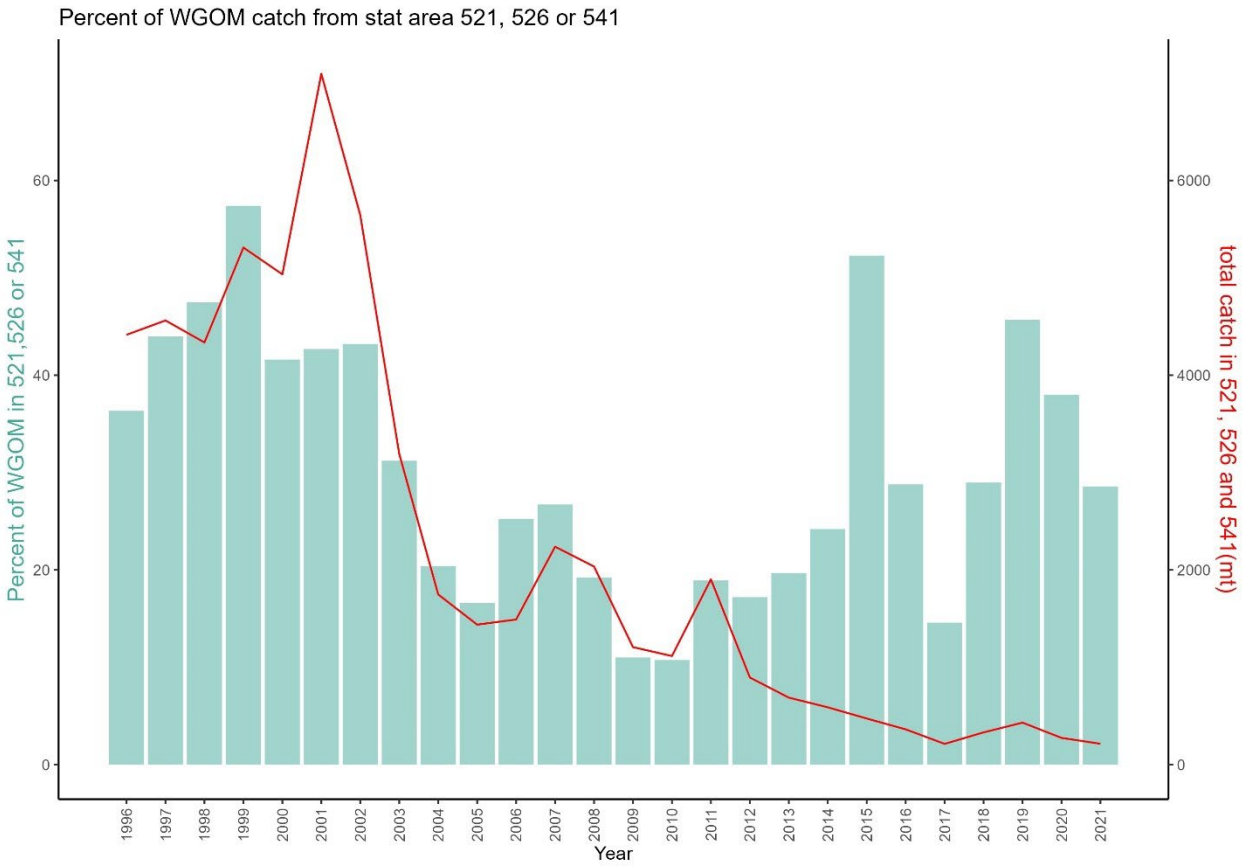
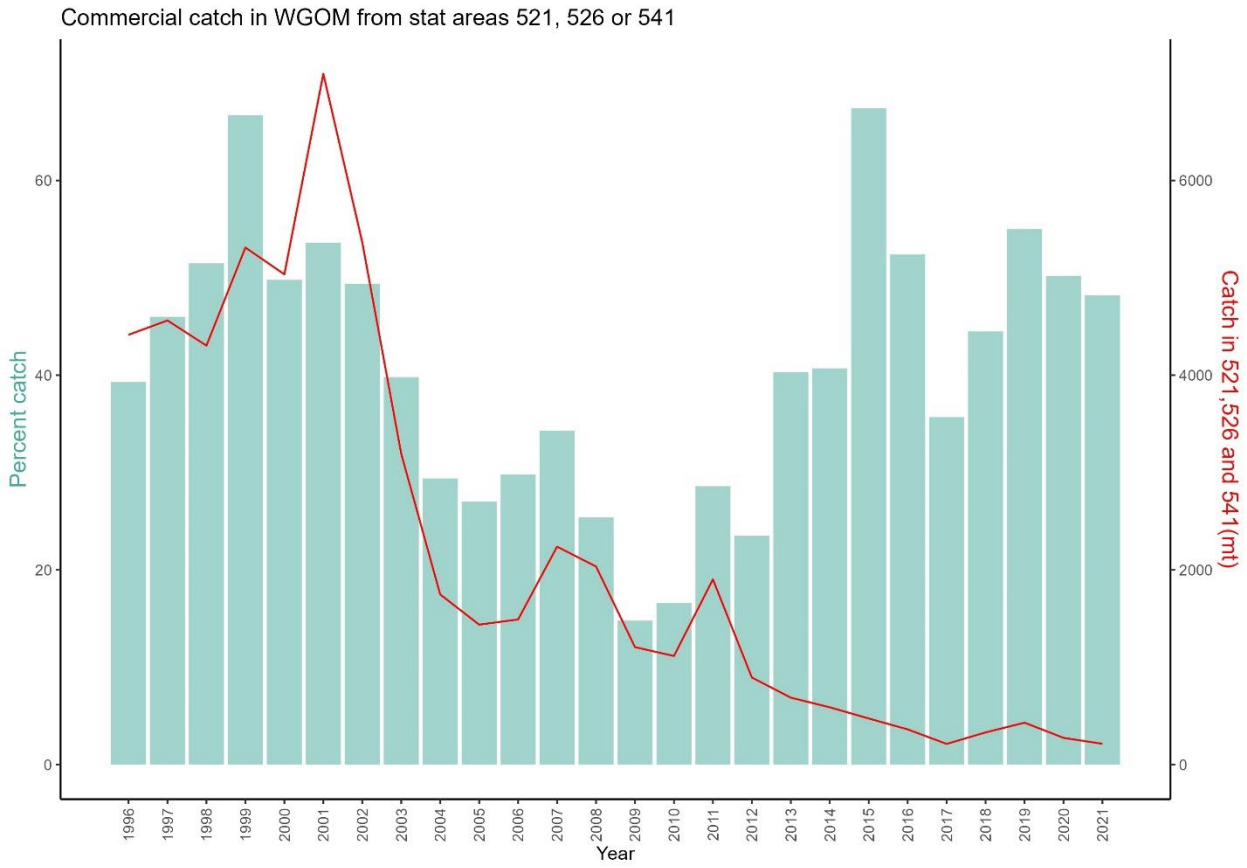


Figure 2. Percentage of commercial cod catch in the WGOM stock area from statistical areas 521, 526, and 541.



Analysis #2 - Percentage of recreational cod catch in the new WGOM stock area from statistical area 521, 526, and 541 during a) 2001-2006 and b) 2010-2021.

Data is compiled across the two timeframes outlined above and is included in Appendix 2.

Data on recreational catch from the WGOM stock area is from the Atlantic Cod Research Track Working Group Report with a terminal year of 2021. Data on catch from statistical areas 521 and 526 is from the Atlantic Cod Research Track Working Group Report and MRIP. Note that because MRIP data is collected by intercept location, there is no recreational catch data available for the offshore statistical area of 541.

Across the time series, there are very little recreational catches reported from statistical areas 521 and 526 in MRIP. From 2001-2021, catches have only been reported in 2002 and 2021 (Appendix 2).

Analysis #3 - Commercial cod catch by landing port from stat areas 521, 526, and 541 from 1996 – 2019.

The Committee also passed the following motion at their March 20th meeting:

> *Task the PDT to develop analysis that shows percent of commercial cod catch by landing port from stat areas 521, 526 & 541 in 4-5 years stanzas from 1996 – 2019.*

The PDT included this information by calendar year and fishing year (Appendix 3).

Updated Base Case Scenario for PSC Calculations Reassigned to New Stock Areas

The PDT previously prepared a 'base case' scenario which uses the same permit landings history time period (1996-2006) used to determine PSCs in Amendment 16 for calculating the current PSCs to individual statistical areas and then re-assigned to the newly identified four stock areas, to illustrate how PSC calculations might look if reassigned to the four new stock areas.[4]

The PSC calculations are based on landings only. The PDT previously noted that not all permits use landings history from 1996-2006 to calculate the PSC for each stock, as outlined in Amendment 16. For permits committed to one of two existing sectors as of March 1, 2008, the PSC for GB cod is based on the landings history for the period 1996-2001. The PSCs calculated in the 'base case' scenario are not what the existing PSCs are based on because the existing PSCs include the grandfathered cod landings, while the 'base case' PSCs are all FY96-FY06. The PDT sought further guidance for how to account for the subset of permits when reassigning PSCs for GB cod.

Based on the following motion passed by the Committee at their March 20th meeting, the PDT updated the 'base case' scenario to account for the subset of permits which have PSCs for GB cod based on a different landings history of 1996-2001.

> *Task the PDT to rerun base case scenario using A16 qualifying time periods accounting for the permits committed to one of two existing sectors as of March 1, 2008 for which their PSC for GB cod is based on the landings history for the period 1996-2001, to calculate PSCs for these grandfathered Moratorium Right Identifiers MRIs for the statistical areas under the current GB stock and reassign to stat areas under the three new stocks.*

The updated base case scenario PSC calculations and a description of how these were calculated can be found in Appendix 4.

[4] See '240314 GF PDT memo to CTME re Atlantic Cod Transition Plan Update', Appendix 2: https://d23h0vhsm26o6d.cloudfront.net/4a_240314-GF-PDT-memo-to-CMTE-re-Atlantic-Cod-Transition-Plan-Update_with-appendices_revised-240411.pdf

Appendix 1 – Total and Commercial WGOM Cod Catch in 521, 526, and 541

Total WGOM Cod Catch (mt) in SRAs 521, 526, and 541

Source: Atlantic Cod Research Track Working Group Report

Table 1. Total WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 1996-2021

Year	WGOM	521.526.541	%521.526.541
1996	12147	4415	36.3%
1997	10374	4562	44.0%
1998	9133	4337	47.5%
1999	9254	5311	57.4%
2000	12106	5036	41.6%
2001	16623	7096	42.7%
2002	13060	5643	43.2%
2003	10223	3192	31.2%
2004	8575	1748	20.4%
2005	8658	1438	16.6%
2006	5903	1491	25.3%
2007	8376	2239	26.7%
2008	10584	2035	19.2%
2009	10971	1207	11.0%
2010	10384	1116	10.7%
2011	10063	1903	18.9%
2012	5202	895	17.2%
2013	3499	688	19.7%
2014	2434	589	24.2%
2015	906	474	52.3%
2016	1259	362	28.8%
2017	1463	213	14.6%
2018	1143	331	29.0%
2019	945	431	45.7%
2020	723	275	38.0%
2021	750	214	28.6%
Most recent 5-year avg			31.2%
Most recent 10-year avg			29.8%

Table 2. Total WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 1996-2006

Year	WGOM	521.526.541	%521.526.541
1996	12147	4415	36.3%
1997	10374	4562	44.0%
1998	9133	4337	47.5%
1999	9254	5311	57.4%
2000	12106	5036	41.6%
2001	16623	7096	42.7%
2002	13060	5643	43.2%
2003	10223	3192	31.2%
2004	8575	1748	20.4%
2005	8658	1438	16.6%
2006	5903	1491	25.3%
mean	10550.5	4024.47	0.369245
median	10223	4415	0.415993
SD	2847.056	1850.953	0.123695
min	5903	1438	0.166102
max	16623	7096	0.573915

Table 3. Total WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 2010-2021

Year	WGOM	521.526.541	%521.526.541
2010	10384	1116	10.7%
2011	10063	1903	18.9%
2012	5202	895	17.2%
2013	3499	688	19.7%
2014	2434	589	24.2%
2015	906	474	52.3%
2016	1259	362	28.8%
2017	1463	213	14.6%
2018	1143	331	29.0%
2019	945	431	45.7%
2020	723	275	38.0%
2021	750	214	28.6%
mean	3230.811	624.3397	0.272993
median	1361	453	0.263848
SD	3527.542	488.9369	0.126454
min	723	213	0.107431
max	10384	1903	0.52279

Table 4. Total WGOM cod catch (mt) in SRAs 521, 526, and 541, 2001-2006

Year	WGOM	521.526.541	%521.526.541
2001	16623	7096	42.7%
2002	13060	5643	43.2%
2003	10223	3192	31.2%
2004	8575	1748	20.4%
2005	8658	1438	16.6%
2006	5903	1491	25.3%
mean	10506.87	3434.675	0.298951
median	9440	2470	0.282371
SD	3804.104	2406.452	0.112363
min	5903	1438	0.166102
max	16623	7096	0.432127

Appendix 1 – Total and Commercial WGOM Cod Catch in 521, 526, and 541

Commercial WGOM Cod Catch (mt) in SRAs 521, 526, and 541

Source: Atlantic Cod Research Track Working Group Report

Table 5. Commercial WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 1996-2021

Year	WGOM	521.526.541	%521.526.541
1996	11221	4415	39.3%
1997	9918	4562	46.0%
1998	8360	4304	51.5%
1999	7957	5311	66.7%
2000	10108	5036	49.8%
2001	13250	7096	53.6%
2002	10858	5364	49.4%
2003	8023	3192	39.8%
2004	5955	1748	29.4%
2005	5333	1438	27.0%
2006	5002	1491	29.8%
2007	6528	2239	34.3%
2008	8021	2035	25.4%
2009	8149	1207	14.8%
2010	6708	1116	16.6%
2011	6662	1903	28.6%
2012	3807	895	23.5%
2013	1709	688	40.3%
2014	1447	589	40.7%
2015	703	474	67.4%
2016	691	362	52.4%
2017	596	213	35.8%
2018	743	331	44.6%
2019	783	431	55.1%
2020	548	275	50.1%
*2021	444	214	48.2%
Most recent 5-year average			46.8%
Most recent 10-year average			45.8%

*There are recreational catches in 521/526 for 2021, but not yet converted from numbers of fish to weight. This number for commercial catch will change slightly when updated.

Table 6. Commercial WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 1996-2006

Year	WGOM	521.526.541	%521.526.541
1996	11221	4415	39.3%
1997	9918	4562	46.0%
1998	8360	4304	51.5%
1999	7957	5311	66.7%
2000	10108	5036	49.8%
2001	13250	7096	53.6%
2002	10858	5364	49.4%
2003	8023	3192	39.8%
2004	5955	1748	29.4%
2005	5333	1438	27.0%
2006	5002	1491	29.8%
mean	8725.909	3996.111	0.438418
median	8360	4415	0.459995
SD	2623.86	1827.72	0.121547
min	5002	1438	0.269649
max	13250	7096	0.667475

Table 7. Commercial WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 2010-2021

Year	WGOM	521.526.541	%521.526.541
2010	6708	1116	16.6%
2011	6662	1903	28.6%
2012	3807	895	23.5%
2013	1709	688	40.3%
2014	1447	589	40.7%
2015	703	474	67.4%
2016	691	362	52.4%
2017	596	213	35.8%
2018	743	331	44.6%
2019	783	431	55.1%
2020	548	275	50.1%
*2021	444	214	48.2%
mean	2070.083	624.3397	0.419475
median	763	453	0.4264
SD	2344.312	488.9369	0.142936
min	444	213	0.1663
max	6708	1903	0.674044

*There are recreational catches in 521/526 for 2021, but not yet converted from numbers of fish to weight. This number for commercial catch will change slightly when updated.

***Table 8.*.Commercial WGOM cod catch (mt) in SRAs 521, 526, and 541, by calendar year, 2001-2006**

Year	WGOM	521.526.541	%521.526.541
2001	16623	7096	42.7%
2002	13060	5643	43.2%
2003	10223	3192	31.2%
2004	8575	1748	20.4%
2005	8658	1438	16.6%
2006	5903	1491	25.3%
mean	10506.87	3434.675	0.298951
median	9440	2470	0.282371
SD	3804.104	2406.452	0.112363
min	5903	1438	0.166102
max	16623	7096	0.432127

Table 1. Recreational cod catch in statistical areas 521 and 526, numbers of fish, by calendar year. Source: MRIP

Recreational Catch of Gulf of Maine Winter Spawners (SRA 521, 526), MRIP Numbers of Fish

	Harvest (A+B1)	PSE	Released (B2)	PSE	Total Catch (A+B1+B2)	PSE
2001	0		0		0	
2002	64,744	66*	41,736	58*	106,481	061*
2003	0		0		0	
2004	0		0		0	
2005	0		0		0	
2006	0		0		0	
2007	0		0		0	
2008	0		0		0	
2009	0		0		0	
2010	0		0		0	
2011	0		0		0	
2012	0		0		0	
2013	0		0		0	
2014	0		0		0	
2015	0		0		0	
2016	0		0		0	
2017	0		0		0	
2018	0		0		0	
2019	0		0		0	
2020	0		0		0	
2021	17,306	100*	0		17,306	100*

*MRIP does not support use of estimates when the PSE > 50.

Table 2. Recreational WGOM cod catch (mt) in SRAs 521 and 526, by calendar year.

Year	WGOM	521.526	%521.526
1996	926	0	0.0%
1997	456	0	0.0%
1998	773	33	4.3%
1999	1297	0	0.0%
2000	1998	0	0.0%
2001	3373	0	0.0%
2002	2202	279	12.7%
2003	2200	0	0.0%
2004	2620	0	0.0%
2005	3325	0	0.0%
2006	901	0	0.0%
2007	1848	0	0.0%
2008	2563	0	0.0%
2009	2822	0	0.0%
2010	3676	0	0.0%
2011	3401	0	0.0%
2012	1395	0	0.0%
2013	1790	0	0.0%
2014	987	0	0.0%
2015	203	0	0.0%
2016	568	0	0.0%
2017	867	0	0.0%
2018	400	0	0.0%
2019	162	0	0.0%
2020	175	0	0.0%
*2021	306	0	0.0%
Most recent 5-year avg			0.0%
Most recent 10-year avg			0.0%

*There are recreational catches in 521/526 for 2021, but not yet converted from numbers of fish to weight. This number for recreational catch will change slightly when updated.

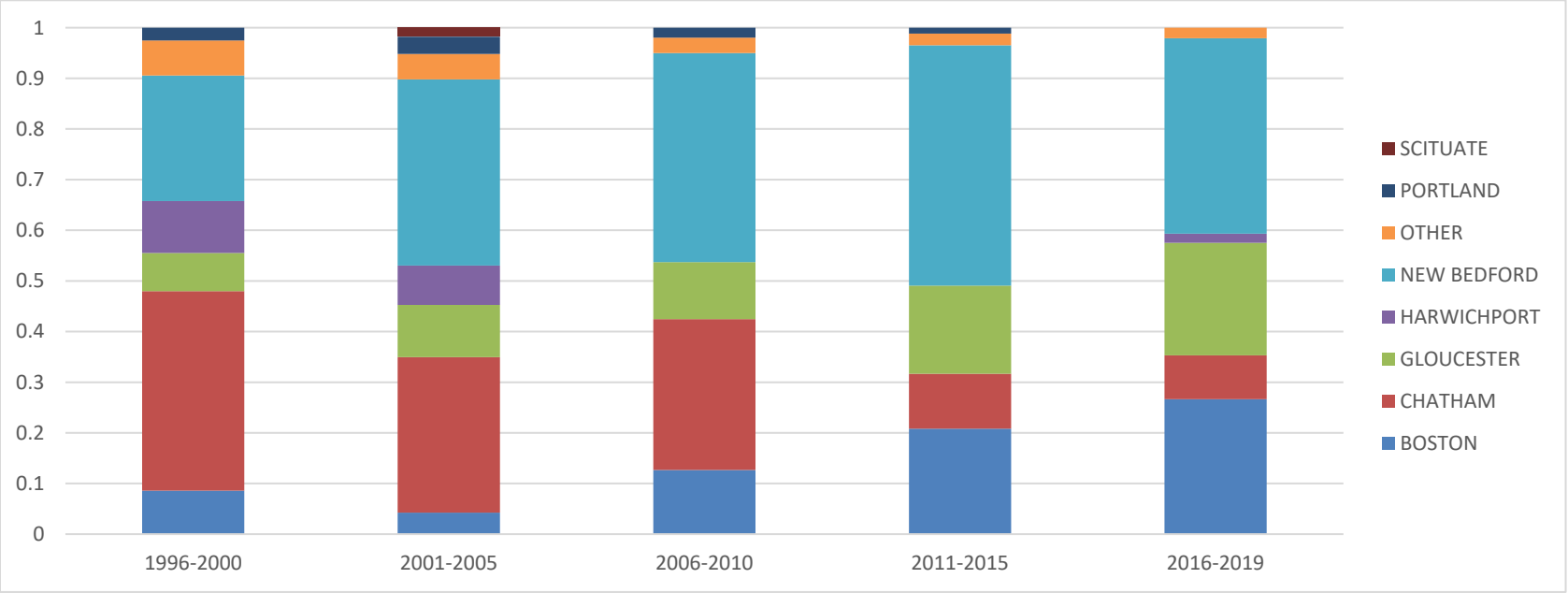
Appendix 3 – Cod catch by port WGOM 521, 526 & 541

Table 1. Percentage of Commercial Cod Landings (lbs.) by Landing Port from Statistical Areas 521, 526, and 541, fishing year groupings. All ports comprising <1% of landings are grouped into "OTHER". Source: CAMS (4/11/2024)

fishing_years	port_name	port_landings	port_percent
1996-2000	BOSTON	3,852,673	8.6%
1996-2000	CHATHAM	17,670,817	39.4%
1996-2000	GLOUCESTER	3,387,595	7.5%
1996-2000	HARWICHPORT	4,598,389	10.2%
1996-2000	NEW BEDFORD	11,118,955	24.8%
1996-2000	OTHER	3,108,795	6.9%
1996-2000	PORTLAND	1,132,284	2.5%
2001-2005	BOSTON	1,297,695	4.2%
2001-2005	CHATHAM	9,390,302	30.7%
2001-2005	GLOUCESTER	3,159,167	10.3%
2001-2005	HARWICHPORT	2,378,402	7.8%
2001-2005	NEW BEDFORD	11,245,855	36.8%
2001-2005	OTHER	1,536,144	5.0%
2001-2005	PORTLAND	1,035,534	3.4%
2001-2005	SCITUATE	548,656	1.8%
2006-2010	BOSTON	1,690,868	12.7%
2006-2010	CHATHAM	3,977,819	29.8%
2006-2010	GLOUCESTER	1,499,700	11.2%
2006-2010	NEW BEDFORD	5,511,078	41.3%
2006-2010	OTHER	407,510	3.1%
2006-2010	PORTLAND	261,882	2.0%
2011-2015	BOSTON	1,601,350	20.8%
2011-2015	CHATHAM	832,820	10.8%
2011-2015	GLOUCESTER	1,339,520	17.4%
2011-2015	NEW BEDFORD	3,649,238	47.5%
2011-2015	OTHER	177,462	2.3%
2011-2015	PORTLAND	88,683	1.2%
2016-2019	BOSTON	624,937	26.6%
2016-2019	CHATHAM	203,296	8.7%
2016-2019	GLOUCESTER	521,502	22.2%
2016-2019	HARWICHPORT	42,077	1.8%
2016-2019	NEW BEDFORD	905,795	38.6%
2016-2019	OTHER	48,905	2.1%

Appendix 3 – Cod catch by port WGOM 521, 526 & 541

Figure 1. Percentage of Commercial Cod Landings (lbs.) by Landing Port from Statistical Areas 521, 526, and 541, fishing year groupings. All ports comprising <1% of landings are grouped into "OTHER".



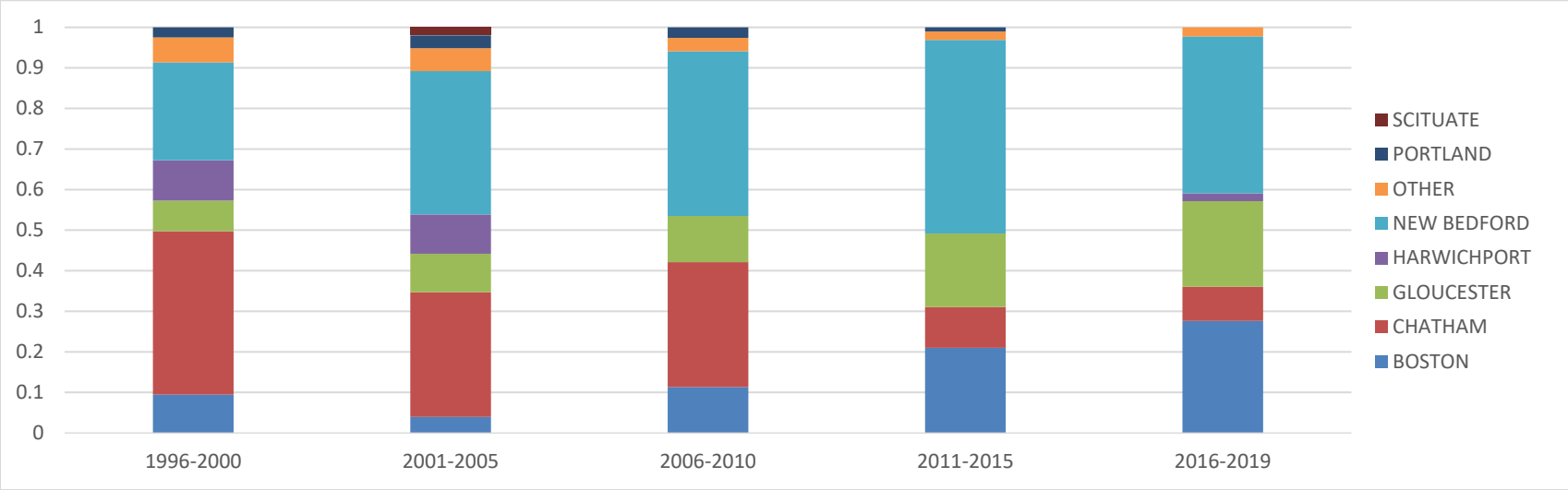
Appendix 3 – Cod catch by port WGOM 521, 526 & 541

Table 2. Percentage of Commercial Cod Landings (lbs.) by Landing Port from Stat Areas 521, 526, and 541, calendar year groupings. All ports comprising <1%] of landings are grouped into "OTHER". Source: CAMS (4/11/2024)

calendar_years	port_name	port_landings	port_percent
1996-2000	BOSTON	4,048,182	9.5%
1996-2000	CHATHAM	17,192,788	40.2%
1996-2000	GLOUCESTER	3,244,250	7.6%
1996-2000	HARWICHPORT	4,232,049	9.9%
1996-2000	NEW BEDFORD	10,308,891	24.1%
1996-2000	OTHER	2,636,321	6.2%
1996-2000	PORTLAND	1,062,228	2.5%
2001-2005	BOSTON	1,343,229	4.0%
2001-2005	CHATHAM	10,362,402	30.7%
2001-2005	GLOUCESTER	3,201,887	9.5%
2001-2005	HARWICHPORT	3,267,339	9.7%
2001-2005	NEW BEDFORD	11,934,692	35.4%
2001-2005	OTHER	1,903,193	5.6%
2001-2005	PORTLAND	1,063,795	3.2%
2001-2005	SCITUATE	669,327	2.0%
2006-2010	BOSTON	1,478,235	11.3%
2006-2010	CHATHAM	4,020,552	30.8%
2006-2010	GLOUCESTER	1,483,081	11.4%
2006-2010	NEW BEDFORD	5,301,737	40.6%
2006-2010	OTHER	431,362	3.3%
2006-2010	PORTLAND	337,969	2.6%
2011-2015	BOSTON	1,750,812	21.0%
2011-2015	CHATHAM	836,129	10.0%
2011-2015	GLOUCESTER	1,507,484	18.1%
2011-2015	NEW BEDFORD	3,977,088	47.7%
2011-2015	OTHER	171,812	2.1%
2011-2015	PORTLAND	85,776	1.0%
2016-2019	BOSTON	677,272	27.6%
2016-2019	CHATHAM	207,174	8.5%
2016-2019	GLOUCESTER	516,479	21.1%
2016-2019	HARWICHPORT	46,978	1.9%
2016-2019	NEW BEDFORD	948,791	38.7%
2016-2019	OTHER	54,850	2.2%

Appendix 3 – Cod catch by port WGOM 521, 526 & 541

Figure 2. Percentage of Commercial Cod Landings (lbs.) by Landing Port from Stat Areas 521, 526, and 541, calendar year groupings. All ports comprising <1%] of landings are grouped into "OTHER".



Appendix 4 - Draft updated 'base case' scenario for PSC calculations

FY24 Percent PSCs by FY23 Sector

New Cod Management Areas
Based on Existing Landings Histories Including "Grandfathered" MRIs

Sector	CODGOME_2024	CODGOMW_2024	CODGB_2024	CODSNE_2024
FGS	1.6%	9.2%	2.7%	3.5%
MCCS	33.6%	8.5%	2.7%	2.4%
MOON	1.1%	12.9%	1.5%	7.1%
MPB	0.5%	0.6%	0.3%	0.1%
NEFS 2	7.2%	15.3%	6.9%	9.1%
NEFS 4	7.1%	10.4%	4.5%	0.7%
NEFS 5	0.0%	0.3%	0.3%	10.5%
NEFS 6	3.1%	2.6%	3.9%	1.9%
NEFS 8	5.6%	7.5%	20.5%	14.4%
NEFS 10	1.1%	1.6%	0.2%	0.5%
NEFS 11	3.4%	6.1%	0.0%	0.7%
NEFS 12	1.0%	2.0%	0.0%	0.2%
NEFS 13	1.5%	3.3%	22.0%	16.1%
NHPB	0.1%	0.6%	0.0%	0.0%
SHS1	11.2%	5.5%	9.3%	2.1%
SHS2	8.9%	2.0%	3.0%	1.0%
SHS3	10.6%	8.5%	19.7%	9.0%
CP	2.2%	3.2%	2.6%	20.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Existing Cod Management Areas
Based on Existing Landings Histories Including "Grandfathered" MRIs

Sector	GOMCOD_2024	GBCOD_2024	Count of MRIs
FGS	0.6%	11.6%	61
MCCS	15.8%	2.3%	106
MOON	6.4%	12.2%	50
MPB	1.2%	0.1%	11
NEFS 2	24.0%	6.4%	113
NEFS 4	11.2%	7.4%	57
NEFS 5	0.3%	0.5%	18
NEFS 6	2.7%	3.0%	19
NEFS 8	2.7%	15.5%	67
NEFS 10	2.5%	0.5%	29
NEFS 11	11.4%	0.4%	41
NEFS 12	3.0%	0.5%	19
NEFS 13	0.6%	12.4%	67
NHPB	1.2%	0.0%	4
SHS1	5.9%	6.8%	50
SHS2	1.9%	2.6%	24
SHS3	4.8%	15.0%	44
CP	3.8%	2.8%	484
Total	**100.0%**	**100.0%**	**1264**

Historical Cod Landed, FY96-FY06
Current Active MRIs Only

	CODGOME	CODGOMW	CODGB	CODSNE	**Grand Total**
Live MT	1,374.4	76,242.5	28,297.0	1,272.3	**107,186.1**
Percent of Total	1.3%	71.1%	26.4%	1.2%	**100.0%**

	GOMCOD	GBCOD	**Grand Total**
Live MT	39,053.7	68,132.4	**107,186.1**
Percent of Total	36.4%	63.6%	**100.0%**

These are FY24 MRI PSCs using FY23 sector membership
Source: dealer, VTR, and MRI databases
Run dates: 1/24/24 and 4/8/24
Greater Atlantic Regional Fisheries Office
April 9, 2024

Description of calculating updated PSCs:

- EGOM - This area contains no grandfathered MRIs. The PSCs were all calculated using FY96-FY06 cod landings. These are the same as the previous 'base case' values

- SNE – The entire stock area is comprised of statistical areas affecting grandfathered MRIs. These PSCs are calculated in the same way as the current GB PSCs are - the grandfathered MRIs get their FY96-01 proportion of cod landed, and the other MRIs get their FY96-06 proportions reduced to reflect the grandfathered MRIs.

- WGOM - The northern part of this area (stat areas 513, 514, 515, "NWGOM") does not include the area for grandfathered MRIs. The southern part (stat areas 521, 526, 541 "SWGOM") contains statistical areas with grandfathered MRIs. PSCs were calculated as follows:
    - PSCs are first calculated for each sub-area.
    - NWGOM PSCs are all calculated by taking the FY96-06 proportion of cod landings from that area, the same as the 'base case'.
    - SWGOM PSCs are calculated the same way as the old GB PSCs. The grandfathered MRIs received their FY96-01 proportions of cod landed and the others received their FY96-06 proportions, adjusted to ensure all of the PSCs sum up to one.
    - The PSCs are then weighted by each sub-area's FY96-06 cod landings (k_{all}) to calculate the entire WGOM PSC. The formula is:

$$\mathrm{PSC}_{WGOM} = \frac{PSC_{NWGOM} * k_{all\ NWGOM} + PSC_{SWGOM} * k_{all\ SWGOM}}{k_{all\ NWGOM} + k_{all\ SWGOM}}$$

The two sub-areas are nearly evenly weighted. The $k_{all\ \mathrm{NWGOM}}$ = 37,633.38 mt and the $k_{all\ \mathrm{SWGOM}}$ = 38,609.15 mt.

- GB - Stat area 464 does not include the area for grandfathered MRIs. The rest of the stock area has grandfathered MRIs. The PSCs are calculated in the same way as WGOM.
    - The area 464 PSC is each MRI's proportion of total FY96-06 cod landings from stat area 464.
    - For the rest of GB (GB-464), each grandfathered MRI's PSC is its proportion of the total FY96-01 cod landings, with non-grandfathered PSCs being the proportion of FY96-06 cod landings adjusted so that all the PSCs the sum to one.
    - The GB PSC is then the average of the stat area 464 PSC and the rest-of-CODGB PSC, weighted by each sub-area's FY96-06 cod k_{all}:

$$\mathrm{PSC}_{GB} = \frac{PSC_{464} * k_{all\ 464} + PSC_{GB-464} * k_{all\ GB-464}}{k_{all\ 464} + k_{all\ GB-464}}$$

The statistical area 464 cod k_{all} = 46.09 mt and the rest of GB cod k_{all} = 28,250.89 mt.

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Rick Bellavance, *Acting Chair* | Cate O'Keefe, PhD, *Executive Director*

Updated 9/12/24

MEMORANDUM

DATE: September 5, 2024

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: Atlantic cod fishery data analysis for Framework 69

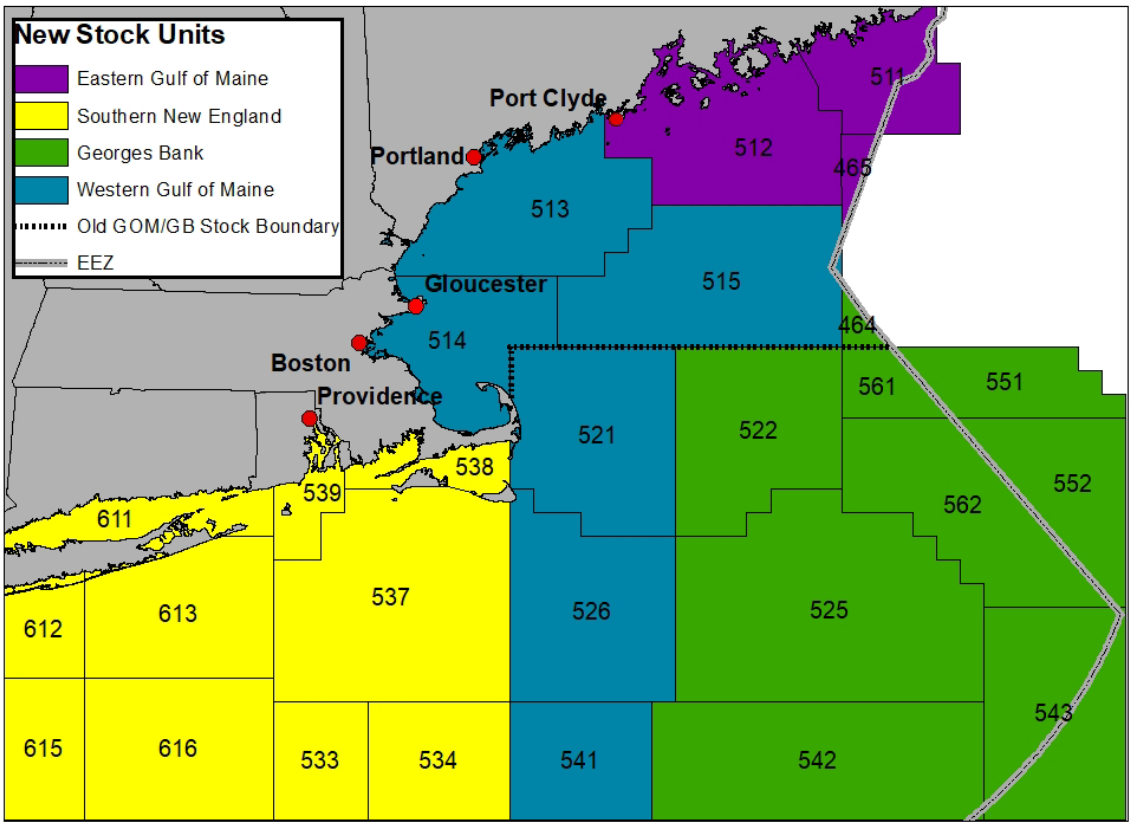
The Groundfish Plan Development Team (PDT) met as a sub-group on August 13, 2024, and as a whole on August 29, 2024, to continue discussing the Atlantic Cod Management Transition Plan analysis to support development of Phase 1 cod measures in Framework Adjustment 69.

Background

At their June 11, 2024, meeting, the Groundfish Committee tasked the PDT with additional analysis to support decision making and development of the "bridge approach" for setting catch advice for cod stocks for FY2025-FY2027 through Framework 69. The PDT addresses several of these tasking motions below.

Commercial and Recreational Fishery Data

The figure below provides the new stock unit boundaries for the four new cod stocks along with the previous GOM/GB stock boundary outlined for reference. Note that Canadian catch is only included in the GB cod assessment.



Analysis #1 – Cod catches by statistical area

The Committee passed the following motion at their June 11th meeting:

> *Task the Plan Development Team (PDT), for the purpose of (1) apportioning the North and South portions of WGOM and (2) determining recreational and commercial catches by statistical areas, to use recent years catch data (Fishing Year 2010 to 2022 broken down by fishing year).*

The PDT provides **commercia**l catches by statistical area annually from FY2010-2023, for each new stock area and for WGOM split into Northern (SRAs 513-515) and Southern (SRAs 521/526/541) in Attachment 1. Recreational catches are provided for the WGOM statistical areas in Attachment 2; however, these estimates are provided as numbers of fish, as recreational weight estimates for the new stock areas are under development.

The PDT calculated the percentage of catch in the Northern and Southern portions of WGOM using commercial catches only. This would have the recreational allocation be taken off the top prior to splitting the WGOM into North and South. **The PDT recommends for WGOM allocating to the recreational fishery first, using the percentage resulting from updating the FW59 methodology (see Analysis #2)** as this simplifies the process of splitting WGOM into

North and South, which is for the commercial fishery only for applying current potential sector contributions (PSCs). This is also more consistent with how the original GOM recreational allocation was made.

Table 1- Percentage of WGOM cod catch in the North (SRAs 513-515) and South (SRAs 521, 526, and 541).

Fishing Year	Percentage in NWGOM	Percentage in SWGOM
2010	0.748	0.252
2011	0.701	0.299
2012	0.786	0.214
2013	0.483	0.517
2014	0.583	0.417
2015	0.245	0.755
2016	0.510	0.490
2017	0.514	0.486
2018	0.401	0.599
2019	0.494	0.506
2020	0.487	0.513
2021	0.447	0.553
2022	0.778	0.222
2023	0.525	0.475
Average 2010-2023	0.550	0.450
5-year average (2019-2023)	0.546	0.454
3-year average (2021-2023)	0.583	0.417

Analysis #2– Recreational/commercial allocation split for WGOM area

The Committee passed the following motion at their June 11th meeting:

> *Move to task the Groundfish Plan Development Team with calculating as an option for a recreational sub-ACL for the WGOM stock, using the same method that was used to calculate the existing 37.5% (see Framework Adjustment 59) but using statistical areas that align with the new WGOM stock area.*

The PDT examined the following table from Framework 59:

Table 2- Gulf of Maine Cod Preliminary Evaluation of Rec/Com Allocation Using New MRIP Landings and Discards, and Updated Commercial Landings and Discards (2019 Assessment Update).

Year	Rec Landings (A+B1)	Rec Discard Mortality	Com Landings	Com Discard Mortality	Total Mortality	Rec Share
		(1,000's of fish)				
2001	975	207	1,168	591	2,941	0.402
2002	626	182	882	410	2,100	0.385
2003	532	153	844	417	1,946	0.352
2004	606	188	766	546	2,105	0.377
2005	742	270	832	225	2,070	0.489
2006	212	127	733	299	1,371	0.247
						0.375

The PDT updated this recreational/commercial allocation calculation for the entire WGOM stock area using the same method in Framework 59 with data from the WGOM cod 2024 Management Track Assessment (data provided in Attachment 3).

Table 3- Western Gulf of Maine Cod Preliminary Evaluation of Rec/Com Allocation (2024 Assessment).

Year	Rec Catch	Comm Catch	Total Catch	Rec Share
		(1,000's of fish)		
2001	1,203	4,328	5,531	0.217
2002	898	3,128	4,025	0.223
2003	700	2,119	2,819	0.248
2004	812	1,515	2,328	0.349
2005	1,039	1,434	2,473	0.420
2006	352	1,490	1,842	0.191
				0.275

This results in a WGOM cod recreational sub-ACL percentage of 27.5%. **The PDT recommends using the updated 27.5% for the WGOM recreational sub-ACL calculation.**

Analysis #3– For-hire VTR data in WGOM

The Committee also passed the following motion at their June 11th meeting:

> *Task the Plan Development Team to analyze VTR data for the for-hire fleet in the WGOM stock area by statistical reporting area for fishing years 2010 through 2022.*

The PDT provides for-hire VTR data in the WGOM stock area in Attachment 4. The PDT emphasizes the utility of VTR data for providing context and verifying trends in recreational for-hire activity, and cautions against overinterpreting or using the data directly. There is no well-defined way to verify any of the for-hire information provided on the VTRs. While the effort estimates provided on the VTRs (i.e., number of passengers) are incorporated into the MRIP for-hire effort estimates, catch on for-hire trips is estimated by MRIP intercept sampling of anglers on those trips and not the actual catch data provided on the VTRs. Thus, the VTR catch data is not used in either the assessments or catch/management advice.

Setting aside these caveats, there is additional for-hire effort seen in VTRs than what is seen in MRIP. For example, for-hire VTRs report catches in statistical area 521 in all years from FY2010-2022, while MRIP only has catch in FY2021 and FY2022 (see Attachment 2). However, the overall trends in WGOM for-hire activity from VTR reporting appear similar to what is seen in MRIP. The majority of catch comes from SRAs 513 and 514, with very little catch in 515, or any of the southern WGOM statistical areas (521, 526, and 541).

Table 4- For-hire VTR data for WGOM statistical areas, averages across FY2010-2022.

Stat Area	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	**Percentage**
	Averages FY2010-2022										
513	52	45	2449	1656	27095	5902	32997	73.7	8.0	81.8	**49%**
514	73	54	1588	1033	25209	3726	28934	68.6	5.1	73.7	**44%**
515	5	4	46	44	1512	1645	1783	4.1	0.4	4.5	**3%**
521	14	7	125	29	1291	93	1384	3.5	0.1	3.6	**2%**
526	6	2	58	7	1100	54	1154	3.0	0.1	3.1	**2%**
541	2	2	2	2	7.5	2.2	10	0.02	0.00	0.02	**0.01%**
TOTALS								**153**	**14**	**167**	

Commercial Cod Catch by Statistical Area

FY10 - FY23, in Metric Tons

	EGOM				WGOM North				WGOM South				WGOM	GB							SNE						Total
Fishing Year	Statistical Areas 465/511	465/511/512	512	Total	513	514	515	Total	521	521/526	526	Total	Total	464	522	522/525/542/543	525/542/543	561	561/562	562	Total	537	538/539	611	613	533/534/612/614+	Total	Grand Total
2010	0.2		17.1	17.2	868.7	2,593.1	192.9	3,654.6	1,231.1		0.6	1,231.6	4,886.3	1.9	703.7		304.2	208.5		31.6	1,249.9	34.8	127.5	6.0	3.0	1.3	172.7	6,326.2
2011	0.5		29.5	30.0	1,002.3	2,979.7	217.9	4,199.8	1,782.6		5.1	1,787.7	5,987.5	2.1	952.6		144.2	111.8		17.2	1,227.9	22.1	77.9	0.8	2.6	3.2	106.7	7,352.2
2012		9.4		9.4	494.3	1,450.2	103.6	2,048.1	555.5		1.0	556.6	2,604.6	3.2	725.2		25.8	27.9		7.4	789.6	29.3	98.6	1.3	2.4	0.4	132.1	3,535.8
2013	1.7		4.5	6.2	186.7	442.9	81.5	711.1	761.2		0.9	762.1	1,473.3	2.2	603.6		37.6	20.3		3.1	666.7	11.3	84.3	0.8	1.7	0.4	98.5	2,244.7
2014	0.7		3.1	3.8	189.0	326.1	119.2	634.3	447.2		6.4	453.6	1,087.9	0.7	759.7		39.1	64.5		4.0	867.9	12.8	28.9	0.2	3.6	1.5	47.0	2,006.5
2015	0.2		1.9	2.1	36.9	95.1	37.2	169.2	516.8		3.8	520.6	689.8	1.2	864.9		18.2	73.8		6.5	964.5	14.3	100.5	2.3	5.7	0.9	123.8	1,780.2
2016	0.6		3.4	4.0	46.9	155.7	47.9	250.6	240.0		1.2	241.2	491.8	2.0	187.1		6.7	70.7		5.7	272.3	10.4	42.5	1.1	3.5	0.2	57.7	825.7
2017	0.2		2.6	2.8	48.9	162.9	52.1	263.8	248.3		0.8	249.1	512.9	0.9	137.3		1.8	41.0		1.7	182.6	3.9	17.9	0.2	0.2	0.2	22.5	720.9
2018	0.4		3.8	4.2	67.7	174.2	66.8	308.7	459.7		2.0	461.6	770.3	0.7	246.4		5.6	103.4		3.1	359.2	4.4	9.2	0.1	3.8	0.0	17.5	1,151.3
2019	0.4		2.2	2.6	85.4	141.0	56.5	282.9	289.4		0.2	289.6	572.5	0.3	167.3		0.5	61.1		3.0	232.2	0.5	3.4	0.1	0.3	0.2	4.6	812.0
2020	0.2		1.2	1.4	48.7	119.1	53.5	221.4	232.0		0.9	232.8	454.2	0.4	122.7		1.3	57.9		0.1	182.4	0.7	3.5	0.1	1.2	0.1	5.7	643.7
2021		1.3		1.3	65.7	118.6	48.4	232.7		288.3		288.3	521.0	0.7	118.7		0.9		54.4		174.8	0.3	1.3	0.2	0.3	0.2	2.3	699.2
2022	1.1		0.8	1.9	89.7	127.8	34.1	251.6	71.7		0.0	71.7	323.3	0.6		45.9			28.4		74.9	0.7	2.1	0.5	0.3	0.1	3.7	403.8
2023	0.1		0.3	0.4	66.0	150.2	30.2	246.4		223.1		223.1	469.5	0.6	59.1			13.7		0.0	73.4	0.6	3.3	0.3	0.4	0.2	4.8	548.1

Area based on VTR-reported area if available, else area calculated from VTR lat/lon, else imputed
Areas grouped due to confidentiality
Commercial groundfish trips only

CAMS landing and estimated discard data as of 8/12/24
Greater Atlantic Regional Fisheries Office
August 12, 2024

Attachment 2 - WGOM recreational cod catch by statistical area

WGOM Recreational Landings (A+B1), numbers of fish

Fishing Year	513	514	521	526
2010	167,005	689,091		
2011	262,907	697,069		
2012	144,347	486,447		
2013	296,790	543,095		
2014	136,157	251,913		
2015	5,978	4,683		
2016	15,895	54,238		
2017	32,044	47,697		
2018	411	4,966		
2019	11,454	4,735		
2020	3,239	1,644		
2021	9,138	53,438	17,306	
2022	3,051	26,614		
2023	10,370	16,066		
2024		31		
	1,098,786	2,881,727	17,306	0

WGOM Recreational Discard Mortality (B2 x .165), numbers of fish

Fishing Year	513	514	521	526
2010	54,126	310,573		
2011	105,862	166,000		
2012	74,943	88,005		
2013	68,348	228,072		
2014	58,191	132,818		
2015	119,454	52,236		
2016	94,188	188,948		
2017	81,964	284,293		
2018	92,702	99,870		
2019	42,897	32,671		
2020	32,337	58,567		
2021	38,538	45,019		
2022	23,550	55,677	178	
2023	43,449	44,458		
2024	76	600		
	930,624	1,787,805	178	0

Total WGOM Recreational Mortality (A+B1+(B2 x.165)), numbers of fish

Fishing Year	513	514	521	526
2010	221,131	999,663		
2011	368,768	863,070		
2012	219,289	574,452		
2013	365,138	771,167		
2014	194,349	384,731		
2015	125,432	56,919		
2016	110,083	243,186		
2017	114,008	331,990		
2018	93,112	104,836		
2019	54,351	37,406		
2020	35,576	60,211		
2021	47,676	98,456	17,306	
2022	26,601	82,291	178	
2023	53,820	60,524		
2024	76	630		
	2,029,410	4,669,532	17,484	0

Percentage of WGOM Recreational Mortality by Year

Fishing Year	513	514	521	526
2010	18.11	81.89		
2011	29.94	70.06		
2012	27.63	72.37		
2013	32.13	67.87		
2014	33.56	66.44		
2015	68.79	31.21		
2016	31.16	68.84		
2017	25.56	74.44		
2018	47.04	52.96		
2019	59.23	40.77		
2020	37.14	62.86		
2021	29.17	60.24	10.59	
2022	24.39	75.45	0.16	
2023	47.07	52.93		
2024	10.71	89.29		
	30.18	69.45	0.26	

Source: MRIP

Attachment 3 - WGOM commercial and recreational cod catch

WGOM Commericial Cod Catch

Year	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9+	Total	1,000s
2001	6	0	570763	2088188	939056	504812	130562	64288	11325	18998	4327997	4328
2002	505	35074	116572	880436	1290572	414241	245089	92082	31298	21830	3127699	3128
2003	38584	23322	142386	163213	595226	802230	212692	85022	30881	25540	2119094	2119
2004	2554	80623	83098	515153	184823	307141	222881	60306	32998	25765	1515342	1515
2005	6021	15502	133868	108669	709881	88520	213279	100566	29050	28582	1433939	1434
2006	801	23557	57969	589829	275697	385899	25520	71628	34949	24013	1489861	1490

WGOM Recreational Cod Catch

Year	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9+	Total	1,000s
2001	56	2104	178298	594211	238829	130207	37120	16463	1785	3615	1202685	1203
2002	235	21121	41536	309208	380467	96168	32464	11215	2990	2174	897578	898
2003	287	14279	77085	68738	222318	222346	46361	24782	11773	12181	700150	700
2004	0	27271	57720	324625	98644	146529	87150	25632	18429	26158	812159	812
2005	0	9066	165904	106786	476964	34803	114531	85768	29427	15982	1039231	1039
2006	176	16352	30740	147895	55079	70489	4331	13206	8160	5338	351767	352

Source: 2024 Management Track Assessment

Table 1. For-hire VTR Activity in Statistical Area 513

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	75	69	3,467	2,664	103,760	8,548	112,308	282.4	11.6	294.0
2011	70	62	3,107	2,253	59,025	7,032	66,057	160.6	9.6	170.2
2012	65	59	3,341	2,360	58,645	5,815	64,460	159.6	7.9	167.5
2013	69	62	3,313	2,365	79,014	7,684	86,698	215.0	10.5	225.5
2014	65	60	2,878	1,983	34,810	5,626	40,436	94.7	7.7	102.4
2015	54	40	2,162	1,194	173	4,195	4,368	0.5	5.7	6.2
2016	45	38	2,229	1,505	5,312	9,354	14,666	14.5	12.7	27.2
2017	43	35	2,089	1,293	335	9,443	9,778	0.9	12.8	13.8
2018	46	40	1,945	1,300	437	5,289	5,726	1.2	7.2	8.4
2019	42	36	1,953	1,335	1,548	5,158	6,706	4.2	7.0	11.2
2020	38	31	1,657	783	2,152	1,547	3,699	5.9	2.1	8.0
2021	35	27	1,901	1,151	3,218	2,796	6,014	8.8	3.8	12.6
2022	33	27	1,800	1,347	3,807	4,246	8,053	10.4	5.8	16.1
Avg	52	45	2,449	1,656	27,095	5,902	32,997	73.7	8.0	81.8

Table 2. For-hire VTR Activity in Statistical Area 514

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	115	102	2,730	2,182	90,487	8,078	98,565	246.3	11.0	257.3
2011	110	93	2,580	2,172	86,847	8,891	95,738	236.4	12.1	248.5
2012	94	78	2,180	1,848	54,230	3,372	57,602	147.6	4.6	152.2
2013	85	75	1,800	1,589	58,144	3,548	61,692	158.2	4.8	163.1
2014	80	62	1,587	1,287	27,680	1,871	29,551	75.3	2.5	77.9
2015	58	29	1,076	474	17	1,860	1,877	0.0	2.5	2.6
2016	58	40	1,292	750	2,808	3,997	6,805	7.6	5.4	13.1
2017	58	44	1,246	667	985	3,180	4,165	2.7	4.3	7.0
2018	59	39	1,054	554	368	3,007	3,375	1.0	4.1	5.1
2019	50	32	850	475	1,599	1,915	3,514	4.4	2.6	7.0
2020	58	34	1,289	426	1,700	1,739	3,439	4.6	2.4	7.0
2021	61	34	1,462	505	1,531	3,017	4,548	4.2	4.1	8.3
2022	64	40	1,501	503	1,315	3,960	5,275	3.6	5.4	9.0
Avg	73	54	1,588	1,033	25,209	3,726	28,934	68.6	5.1	73.7

Table 3. For-hire VTR Activity in Statistical Area 515

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	3	3	72	72	10,124	354	10,478	27.6	0.5	28.0
2011	8	8	46	46	3,476	230	3,706	9.5	0.3	9.8
2012	5	5	51	51	1,281	112	1,393	3.5	0.2	3.6
2013	4	4	14	14	1,171	70	1,241	3.2	0.1	3.3
2014	9	9	38	37	2,939	91	3,030	8.0	0.1	8.1
2015	8	5	41	37	-	374	374	-	0.5	0.5
2016	4	3	59	57	593	793	1,386	1.6	1.1	2.7
2017	8	6	38	34	-	372	372	-	0.5	0.5
2018	5	4	41	36	6	289	295	0.0	0.4	0.4
2019	< 3	< 3	65	59	21	353	374	0.1	0.5	0.5
2020	< 3	< 3	57	52	5	156	161	0.0	0.2	0.2
2021	< 3	< 3	48	43	-	246	246	-	0.3	0.3
2022	3	< 3	33	31	38	90	128	0.1	0.1	0.2
Avg	5	4	46	44	1,512	1,645	1,783	4.1	0.4	4.5

Table 4. For-hire VTR Activity in Statistical Area 521

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	23	8	132	40	6,774	182	6,956	18.4	0.2	18.7
2011	22	9	108	25	1,469	112	1,581	4.0	0.2	4.2
2012	17	7	90	23	424	60	484	1.2	0.1	1.2
2013	14	7	75	22	468	51	519	1.3	0.1	1.3
2014	16	5	110	17	318	58	376	0.9	0.1	0.9
2015	13	7	95	32	624	88	712	1.7	0.1	1.8
2016	11	7	55	42	2,623	281	2,904	7.1	0.4	7.5
2017	12	7	73	24	1,594	100	1,694	4.3	0.1	4.5
2018	10	6	100	21	340	42	382	0.9	0.1	1.0
2019	11	6	171	33	524	51	575	1.4	0.1	1.5
2020	10	6	180	26	466	52	518	1.3	0.1	1.3
2021	11	6	192	35	768	90	858	2.1	0.1	2.2
2022	10	4	240	32	386	43	429	1.1	0.1	1.1
Avg	14	7	125	29	1,291	93	1,384	3.5	0.1	3.6

Table 5. For-hire VTR Activity in Statistical Area 526

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	3	< 3	20	7	2,878	85	2,963	7.8	0.1	7.9
2011	8	< 3	19	7	2,192	39	2,231	6.0	0.1	6.0
2012	4	< 3	18	5	893	8	901	2.4	0.0	2.4
2013	< 3	-	< 3	-	-	-	-	-	-	-
2014	< 3	-	< 3	-	-	-	-	-	-	-
2015	< 3	< 3	24	5	1,339	34	1,373	3.6	0.0	3.7
2016	-	-	-	-	-	-	-	-	-	-
2017	4	3	49	20	2,260	107	2,367	6.2	0.1	6.3
2018	8	7	63	16	1,745	163	1,908	4.7	0.2	5.0
2019	11	< 3	109	10	403	105	508	1.1	0.1	1.2
2020	11	3	209	11	870	68	938	2.4	0.1	2.5
2021	11	3	150	12	1,046	24	1,070	2.8	0.0	2.9
2022	11	3	96	4	680	64	744	1.9	0.1	1.9
Avg	6	2	58	7	1,100	54	1,154	3.0	0.1	3.1

Table 6. For-hire VTR Activity in Statistical Area 541

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	< 3	< 3	< 3	< 3	20	7	27	0.1	0.0	0.1
2011	4	3	4	3	33	9	42	0.1	0.0	0.1
2012	< 3	-	< 3	-	-	-	-	-	-	-
2013	< 3	< 3	< 3	< 3	45	12	57	0.1	0.0	0.1
2014	-	-	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	-	-	-	-	-
2018	-	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-	-
2021	< 3	-	< 3	-	-	-	-	-	-	-
2022	< 3	-	< 3	-	-	-	-	-	-	-
Avg	2	2	2	2	8	2	10	0.0	0.0	0.02

New England Fishery Management Council
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Rick Bellavance, *Chair* | Cate O'Keefe, PhD, *Executive Director*

MEMORANDUM

DATE: October 23, 2024

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: WGOM cod commercial allocation

The Groundfish Plan Development Team (PDT) met as a sub-group on October 4 and 16, 2024, and as a whole on October 18, 2024, to discuss analysis to support development of Framework 69 cod measures for Phase 1 of the Atlantic Cod Management Transition Plan. This memorandum focuses on the Groundfish Committee (Committee) tasking analysis for Western Gulf of Maine (WGOM) cod commercial allocation.

Background

At their September 11, 2024, meeting, the Committee tasked the PDT with the following motion:

> *Under Framework Adjustment 69, the GF Committee directs the Plan Development Team to develop an Option 3 for setting quotas for cod (as part of phase 1 "bridge plan" for the Atlantic Cod Transition Plan) that apportions the WGOM cod ACL following this approach:*
>
> 1. *Recreational Sub-ACL off the top*
> 2. *Split the Commercial Sub-ACL:*
>
>   *2a) 75/25 NWGOM / SWGOM FY2010-2012 and 2022 (rationale spreadsheet)*[1] *and 2b) Recent historical catch avg FY2010-2023 (55/45) for NWGOM / SWGOM*
>
> 3. *Allocate the NWGOM to GOM PSC's. Resulting ACE can only be used in 513, 514, 515*
> 4. *Allocate the SWGOM to GB PSC's. Resulting ACE can only be used in 521, 526, 541*

[1] See Attachment 1.

5. *Permit holders with GB PSC will receive 3 ACE allocations: GB, SWGOM, SNE. Permit holders with GOM PSC will receive 2 ACE allocations: EGOM, NWGOM*

To fully analyze the scope of the motion, the PDT approached this analysis in two parts: 1) options for WGOM North and South apportionment (what percentage to use for split) and 2) options for WGOM sector allocation (one combined WGOM sector sub-annual catch limits (ACL) or separate Northern WGOM and Southern WGOM sub-ACLs).

1. WGOM North and South Apportionment

The PDT reviewed the previous Committee tasking to use recent historical catches as the basis for apportioning the Northern portion of WGOM (SWGOM) and the Southern portion of WGOM (SWGOM), which results in a split of 55% North / 45% South (see Attachment 2, Analysis #1). The PDT then discussed the Committee option put forward of 75% North / 25% South and reviewed the rationale provided. The PDT notes that the Committee option uses sector sub-ACLs rather than commercial sub-ACLs, and so recalculated this analysis to reflect commercial sub-ACL values for consistency, which resulted in minor changes (see similarly Option 1 below).

Additionally, the PDT discussed what analysis could be provided to show how sector annual catch entitlements (ACEs) would change, based on an apportionment of 55:45 vs.75:25. Table 1 provides the total ACE amounts for each sector for WGOM cod under the two apportionment ratios and calculates the percent difference in ACE between the two options that the sectors would receive.

Table 1- Preliminary sector ACE amounts for WGOM cod under an apportionment of 55% North / 45% South and 75% North / 25 % South.

Sector Name	55% North - 45% South *(PDT Option 2)*			Change (55% vs 75%)				75% North - 25% South *(Committee Option 3)*		
	WGOM Cod Total	WGOM Cod North	WGOM Cod South	% Change Total	Abs Change Total	Abs Change North	Abs Change South	WGOM Cod Total	WGOM Cod North	WGOM Cod South
FGS	12.6	0.9	11.7	-38%	-4.9	0.3	-5.2	7.8	1.3	6.5
MCCS	23.5	21.2	2.4	28%	6.6	7.7	-1.0	30.2	28.8	1.3
MPB	1.7	1.6	0.1	29%	0.5	0.6	-0.1	2.2	2.1	0.1
Mooncusser	21.8	8.4	13.4	-13%	-2.9	3.1	-6.0	18.9	11.4	7.4
NEFS 2	47.0	36.3	10.8	18%	8.4	13.2	-4.8	55.4	49.5	6.0
NEFS 4	24.5	15.0	9.5	5%	1.2	5.4	-4.2	25.7	20.4	5.3
NEFS 5	0.9	0.4	0.5	-7%	-0.1	0.2	-0.2	0.9	0.6	0.3
NEFS 6	0.8	0.2	0.6	-22%	-0.2	0.1	-0.3	0.6	0.3	0.3
NEFS 8	43.8	8.6	35.2	-29%	-12.5	3.1	-15.7	31.3	11.7	19.6
NEFS 10	2.6	2.4	0.2	30%	0.8	0.9	-0.1	3.4	3.3	0.1
NEFS 11	15.7	15.2	0.4	34%	5.3	5.5	-0.2	21.0	20.8	0.2
NEFS 12	5.7	5.0	0.7	26%	1.5	1.8	-0.3	7.2	6.8	0.4
NEFS 13	12.5	0.7	11.7	-40%	-4.9	0.3	-5.2	7.5	1.0	6.5
NHPB	1.5	1.5	0.0	36%	0.6	0.6	-0.0	2.1	2.1	0.0
SHS 1	16.6	9.4	7.2	1%	0.2	3.4	-3.2	16.8	12.8	4.0
SHS 2	4.2	2.3	1.9	-1%	-0.0	0.8	-0.9	4.2	3.1	1.1
SHS 3	0.3	0.3	0.1	15%	0.1	0.1	-0.0	0.4	0.3	0.0
Common Pool	8.0	4.8	3.2	4%	0.3	1.7	-1.4	8.3	6.5	1.8
Sector Total	235.9	129.4	106.5	-0%	-0.3	47.0	-47.3	235.6	176.4	59.2

Based on final 2024 rosters
Values in metric tons

The PDT interprets the intent of the Committee motion as a desire to account for historic differences in quotas and fishing opportunities between Gulf of Maine (GOM) and Georges

Bank (GB) and discussed exploring other possible criteria to address the intent. The following outlines the different permutations of the apportionment split that the PDT evaluated and offers for consideration. In each option, the green cells are the driving criteria of the permutation considered, and the gray text is the data that was not included in the calculation.

Option 1 - Remove years where the commercial sub-ACL of one stock is more than twice the other stock.

This option closely resembles the Committee motion, though adds an additional two years to the period of analysis. Years were removed from the analysis if the commercial sub-ACL of one stock was more than twice the other stock. This option aims to minimize the potential for the commercial sub-ACL to have an outsized effect on the relative catch in the two stock areas. Removing years where the size of either stock is more than twice the other stock minimizes the potential for stock size to have an outsized effect on the relative catch in the two stock areas

Table 2 – Average percentage of NWGOM and SWGOM catch when one stock's commercial sub-ACL is less than twice the other.

Fishing Year	Commercial sub-ACL		% GB to GOM sub-ACLs	NWGOM % of total WGOM catch	SWGOM % of total WGOM catch
	GOM	GB			
2010	4,567	3,430	75%	75%	25%
2011	4,825	4,301	89%	70%	30%
2012	3,699	4,605	124%	79%	21%
2013	830	1,807	218%	48%	52%
2014	830	1,769	213%	58%	42%
2015	207	1,787	863%	25%	75%
2016	280	608	217%	51%	49%
2017	280	528	188%	51%	49%
2018	369	1,194	324%	40%	60%
2019	360	1,568	435%	49%	51%
2020	275	1,073	390%	49%	51%
2021	270	1,093	404%	45%	55%
2022	270	244	90%	78%	22%
2023	278	375	135%	52%	48%
Average				**68%**	**32%**

Option 2 - Remove years where the difference between utilization of the commercial sub-ACL is greater than 25%.
This option provides another way to account for differences in quotas and fishing opportunities by basing criteria on historical utilization. It minimizes the potential for either stock being more constraining than the other to have an outsized effect on the relative catch in the two stock areas.

Table 3 - Average percentage of NWGOM and SWGOM catch when the difference in utilization is less than 25%. SWGOM catch and % of SWGOM catch vs GB catch shown for context.

Fishing Year	Commercial sub-ACL		Commercial Catch		Utilization of Commercial sub-ACL		Difference between Utilization	NWGOM % of total WGOM catch	SWGOM % of total WGOM catch	SWGOM Catch	% SWGOM catch vs GB catch
	GOM	GB	GOM	GB	GOM	GB					
2010	4,567	3,430	3,843	2,830	84%	83%	2%	75%	25%	1,231.6	44%
2011	4,825	4,301	4,461	3,277	92%	76%	16%	70%	30%	1,787.7	55%
2012	3,699	4,605	2,211	1,622	60%	35%	25%	79%	21%	556.6	34%
2013	830	1,807	741	1,573	89%	87%	2%	48%	52%	762.1	48%
2014	830	1,769	663	1,386	80%	78%	2%	58%	42%	453.6	33%
2015	207	1,787	186	1,637	90%	92%	2%	25%	75%	520.6	32%
2016	280	608	267	597	95%	98%	3%	51%	49%	241.2	40%
2017	280	528	269	446	96%	84%	11%	51%	49%	249.1	56%
2018	369	1,194	315	838	85%	70%	15%	40%	60%	461.6	55%
2019	360	1,568	287	532	80%	34%	46%	49%	51%	289.6	54%
2020	275	1,073	225	425	82%	40%	42%	49%	51%	232.8	55%
2021	270	1,093	235	471	87%	43%	44%	45%	55%	288.3	61%
2022	270	244	259	152	96%	62%	33%	78%	22%	71.7	47%
2023	278	375	248	301	89%	80%	9%	52%	48%	223.1	74%
Average								**55%**	**45%**		

Option 3 - Remove fishing year 2014, when sectors had GOM cod trip limit for part of the year.

Removing 2014 excludes the effect of the GOM cod trip limit from skewing the catch ratio between the two stock areas. Rather than representing a lower GOM ACL in 2014, the trip limit had more complex effects on catch. Further, because it was implemented mid-year for only a portion of the year, the effect is not easily interpreted without completely removing 2014. Only Options 2 and 5 include 2014 in their analyses, but the PDT did assess removing 2014 from those options and found that it does not affect the resulting split shown in the tables.

Table 4 - Average percentage of NWGOM and SWGOM catch when 2014 is removed.

Fishing Year	NWGOM % of total WGOM catch	SWGOM % of total WGOM catch
2010	75%	25%
2011	70%	30%
2012	79%	21%
2013	48%	52%
2014	58%	42%
2015	25%	75%
2016	51%	49%
2017	51%	49%
2018	40%	60%
2019	49%	51%
2020	49%	51%
2021	45%	55%
2022	78%	22%
2023	52%	48%
Average	**55%**	**45%**

Option 4 - Remove all but most recent 5 fishing years

This option proposes to use the most recent 5 years which in acknowledgement of Committee concerns around minimizing disruption to current fishing trends and statements around reflecting the current state of ecological dynamics on the water. Using a longer time span encompasses multiple interacting management and ecological changes.

Table 5 - Average percentage of NWGOM and SWGOM catch using the most recent 5 years.

Fishing Year	NWGOM % of total WGOM catch	SWGOM % of total WGOM catch
2010	75%	25%
2011	70%	30%
2012	79%	21%
2013	48%	52%
2014	58%	42%
2015	25%	75%
2016	51%	49%
2017	51%	49%
2018	40%	60%
2019	49%	51%
2020	49%	51%
2021	45%	55%
2022	78%	22%
2023	52%	48%
Average	**55%**	**45%**

Option 5 - Remove outlier years

This option considers differences in commercial sub-ACLs and utilization by removing the highest and lowest utilization percentages for each of the two stocks, GB and GOM, and the most extreme ratio between commercial sub-ACLs. Removing outliers is a simplistic way to focus on trends while minimizing the effect of non-representative years.

Table 6 - Average percentage of NWGOM and SWGOM catch when outliers of utilization and sub-ACLs are removed.

Fishing Year	% GB to GOM sub-ACLs	Utilization of Commercial sub-ACL		NWGOM % of total WGOM catch	SWGOM % of total WGOM catch
		GOM	GB		
2010	75%	84%	83%	75%	25%
2011	89%	92%	76%	70%	30%
2012	124%	60%	35%	79%	21%
2013	218%	89%	87%	48%	52%
2014	213%	80%	78%	58%	42%
2015	863%	90%	92%	25%	75%
2016	217%	95%	98%	51%	49%
2017	188%	96%	84%	51%	49%
2018	324%	85%	70%	40%	60%
2019	435%	80%	34%	49%	51%
2020	390%	82%	40%	49%	51%
2021	404%	87%	43%	45%	55%
2022	90%	96%	62%	78%	22%
2023	135%	89%	80%	52%	48%
Average				**57%**	**43%**

Summary

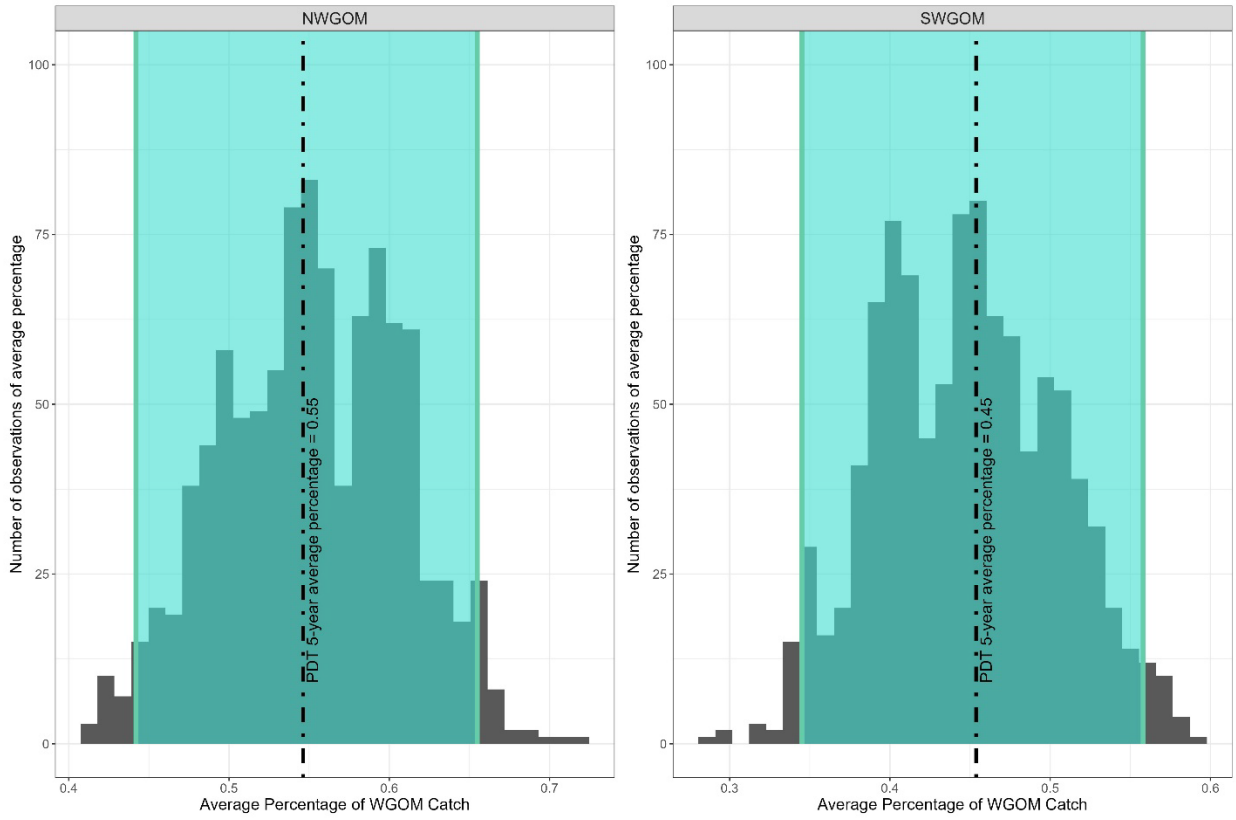
Table 7 coalesces the results of the five options into a summary table alongside the original PDT proposal split of 55:45 and the Committee motion of 75:25. Of the options explored by the PDT, the PDT notes that the majority tends towards 55% North / 45% South. The average of all the PDT options (Options 0-5) is 57.5% North/ 42.5% South.

Table 7 – Average percent of NWGOM and SWGOM catch across all permutations

	NWGOM	SWGOM
Option 0: PDT original proposal	55%	45%
Option 1: quotas	68%	32%
Option 2: utilization	55%	45%
Option 3: FY2014	55%	45%
Option 4: recent 5 FYs	55%	45%
Option 5: outliers	57%	43%
Committee Motion	75%	25%

Further permutations were explored through a bootstrap analysis which performs naïve random option draws from the data. In this exercise, 1,000 new independent datasets are created by randomly selecting 5 years from the 14-year period (FY2010-2023). The average percentage of NWGOM and SWGOM catch of the total WGOM catch was calculated for each new data set, generating 1,000 averages for each portion of WGOM. Figure 1 illustrates the distribution of those average for each area and suggests that the central tendency of this data is towards the 55:45 split, depicted by the black dotted line on the plot. Implementing options near the tails of the distribution will likely produce a change from the observed central tendency of the data.

Figure 1 - Distribution of average percentage of total WGOM catch by area. The black dotted line represents Option 0 or the original PDT proposal of 55:45 split.



The PDT has several concerns about a NWGOM:SWGOM apportionment that is strongly skewed towards one area (i.e., 75% North / 25% South):

1. *Not consistent with fishing activity in recent years*
Based on the analyses above, skewing the WGOM split strongly in favor of one area over another is counter to current fishery operations and would be inconsistent with a stated rationale of minimizing disruptions to the current fishery.

2. *Biological consideration of two WGOM populations (spring and winter spawners)*
There are long term biological concerns, particularly around extirpating distinct spawning groups, about potentially focusing fishing activity within the WGOM on one population over

the other. Shifting quota to a larger northern proportion could shift more relative effort/catch onto the stock that only spawns in the north (spring spawners), which seems to be in poorer condition.[2] This concern is further heightened with a choice of implementing separate Northern WGOM and Southern WGOM sector sub-ACLs (section #2 below). While the outcome of the 2023 Research Track Assessment and subsequent management track assessments is four assessment models and a WGOM stock that combines two biological populations (winter and spring spawners), it is hoped that future work will allow a more refined assessment of the two populations in the WGOM.

3. Equity, access for vessels fishing in SWGOM

Based on the quantitative analyses presented above, it is not clear that Committee option of a 75:25 split of the WGOM ACL between NWGOM and SWGOM ACEs is consistent with the equitability requirement of National Standard 4 or National Standard 8 requirement to minimize adverse effects on communities and to provide for sustained participation of such communities. Table 8 and Table 9 provide a history of port-level revenue and active vessels over the 2010-2023 fishing years. All major groundfish ports show a declining trend for both revenue and vessels. The decline is not as sharp for Boston/Scituate compared to some of the other major ports, such as Gloucester, New Bedford, and Portland.

[2] See WGOM cod 2024 Management Track Assessment: https://d23h0vhsm26o6d.cloudfront.net/2.a.v_2024_COD_WGM_Presentation_SSC.pdf

Table 8 – Port-level groundfish and non-groundfish revenue (millions of 2023 USD) from groundfish trips.

Port	Metric	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BOSTON/SCITUATE, MA	GF Rev	16.52	17.84	16.79	14.30	15.04	13.83	11.39	13.25	15.50	14.62	15.43	13.83	11.3	12.32
	NGF Rev	3.53	3.90	3.32	3.27	3.46	3.68	3.56	3.82	3.66	3.37	2.66	4.26	3.13	3.27
	Total Rev	20.05	21.73	20.11	17.57	18.50	17.51	14.96	17.07	19.16	17.99	18.09	18.09	14.43	15.58
CHATHAM, MA	GF Rev	2.96	3.20	1.31	1.00	0.67	0.68	0.28	0.57	0.44	0.34	0.16	0.2	0.06	0.12
	NGF Rev	3.11	4.66	3.49	2.72	5.06	2.83	4.10	4.05	5.06	3.41	4.14	2.06	2.23	2.24
	Total Rev	6.07	7.87	4.80	3.71	5.73	3.52	4.37	4.62	5.50	3.75	4.3	2.26	2.29	2.35
GLOUCESTER, MA	GF Rev	37.81	39.52	27.69	19.73	18.80	18.87	21.61	21.14	21.82	21.94	21.09	19.67	14.14	12.64
	NGF Rev	6.16	7.12	5.48	4.58	5.11	4.95	5.79	6.23	5.29	4.54	4.08	5.57	3.95	4.14
	Total Rev	43.97	46.65	33.16	24.31	23.90	23.82	27.40	27.37	27.11	26.48	25.18	25.24	18.09	16.78
NEW BEDFORD, MA	GF Rev	39.15	39.66	28.30	25.10	26.99	24.33	19.58	13.63	13.99	14.08	22.76	19.11	16.78	13.11
	NGF Rev	6.99	10.87	8.58	7.43	8.24	7.41	8.66	6.21	5.16	4.37	6.04	7.2	7.45	5.9
	Total Rev	46.14	50.53	36.88	32.53	35.23	31.75	28.23	19.84	19.16	18.45	28.8	26.31	24.23	19.01
PORTLAND, ME	GF Rev	C	6.42	8.11	7.26	8.18	6.51	4.73	3.68	3.40	2.51	1.81	1.62	2.9	2.51
	NGF Rev	C	1.02	1.04	0.84	0.73	0.78	0.57	0.78	0.71	0.79	0.33	0.49	1.03	0.52
	Total Rev	C	7.44	9.16	8.10	8.91	7.29	5.30	4.46	4.11	3.30	2.14	2.11	3.93	3.03
NH (All Ports)	GF Rev	4.11	5.65	4.46	2.63	1.87	0.86	0.85	0.85	1.15	1.01	1.43	1.16	0.55	0.27
	NGF Rev	0.51	0.79	0.87	0.49	0.86	0.79	0.58	0.75	0.82	0.77	0.49	0.44	0.31	0.25
	Total Rev	4.62	6.44	5.33	3.12	2.73	1.65	1.43	1.60	1.97	1.78	1.92	1.61	0.86	0.53
POINT JUDITH, RI	GF Rev	2.14	2.54	2.22	2.89	2.37	2.53	1.55	1.16	0.79	0.41	0.21	0.16	0.08	0.02
	NGF Rev	3.63	5.31	4.06	3.72	4.37	2.37	1.81	1.46	1.60	1.54	1.6	1.1	1.25	0.85
	Total Rev	5.77	7.86	6.28	6.61	6.74	4.90	3.37	2.62	2.39	1.95	1.81	1.26	1.33	0.87

Table 9 - Number of vessels landing a groundfish trip by port.

State/Port	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BOSTON/SCITUATE, MA	38	39	35	29	30	28	30	25	32	32	28	29	27	27
CHATHAM, MA	33	29	27	27	19	25	25	29	27	26	24	21	16	22
GLOUCESTER, MA	123	110	98	85	74	69	67	65	63	60	60	53	55	52
NEW BEDFORD, MA	90	90	85	65	61	73	59	52	28	32	39	29	27	25
PORTLAND, ME	C	42	44	33	33	28	28	23	29	25	28	24	26	27
NH (All Ports)	31	31	28	24	17	15	16	17	18	17	15	11	6	6
POINT JUDITH, RI	50	43	50	50	48	47	43	35	31	24	23	13	14	11

2. Separate WGOM Sector Sub-ACLs

The PDT discussed the idea of establishing separate Northern WGOM and Southern WGOM sector sub-ACLs and offers the following points for consideration:

- Biologically, there is not a need to split WGOM into northern and southern portions, given the scale of the assessment is the entire WGOM area unless the goal is to implement controls to help protect spring verse winter spawning components. Having separate WGOM and SWGOM sub-ACLs could be used as a tool to help accomplish spawning component protection. However, the committee option (75:25) would likely put more relative pressure on the spring spawners which are in poorer condition.
- Maintaining a single WGOM sub-ACL would have management measures spatially align with the assessment scale. In the longer term, the Council may consider adjustments to management units as part of Phase 2 of the Atlantic Cod Management Transition Plan.
- Splitting the WGOM area further could mean less precision in catch data. However, target at-sea monitoring (ASM) coverage of 100% should make this less of a concern.
- Separate sub-ACLs reduces flexibility for vessels and businesses to adapt to changing conditions or to optimize the use of allocation portfolios.
- While GOM lease prices have been higher than GB cod in the past, historic ACE lease prices for GOM cod and GB cod are unlikely to be informative for predicting ACE lease prices for WGOM or NWGOM/SWGOM. These historical prices related not only to cod ACLs at those times, but other economic factors including fuel prices, landed value of stocks, bycatch rates of cod relative to other stocks landed, and global markets. Comparing projected FY 2025 ACLs to recent fishery landings amounts and prices, as well as current fuel costs, is more likely provide a useful estimate of future ACE lease prices (Table 10 and Table 11).
- The concerns highlighted are magnified if the apportionment is skewed towards one area over another (i.e., 75% North / 25% South).

The PDT emphasizes that the regulatory system is not nimble enough to revise the codified management measures mid-year due to the timing requirements of Council actions and rulemaking. It should be expected that whichever way the Council chooses to allocate WGOM (one combined sub-ACL or separate for North and South) will remain for the entire fishing year 2025 and at least through 2026, given time needed to analyze and consider changes in a future framework action. If there is an interest in setting up a system that could be changed mid-way through the year (to go from separate sub-ACLs to one combined), that could be considered as a sector provision in operations plans, rather than the separation being mandated by regulation via the Framework.

Moratorium Right Identifier (MRI) analysis

To understand the scope of potential shifts in effort between the North and South, the PDT identified the number of MRIs that have only GOM potential sector contribution (PSC) or only GB PSC and thus would now have access to an area they would not have previously, as well as their relative contributions represented by those PSCs.

Figure 2 shows the total Atlantic cod catch (landings and discards) in pounds for Sector MRIs fishing from 2021 to 2024. MRIs have been split into three groups based on their potential sector contributions for the GOM and GB stock areas in that year. The "both" group includes MRIs whose GOM and GB-specific PSCs each made up at least 5% of their combined cod PSC (GOM + GB PSCs). If one of their area-specific PSCs fell below this threshold, the MRI was assigned to the other area. For example, if an MRI has a PSC of 0.1% in the GOM and 1% in GB, their smallest PSC is 9% of their total (0.1/1.1), so they are assigned to the "both" category. If their GOM PSC was instead 0.01%, it would be only 1% of their total PSC, so they would be assigned to the GB-only category.

Between 2021 and 2024, there has been notable catch of cod within statistical areas 515 and 521 by MRIs that only have GB PSCs, while MRIs with only GOM PSC have almost exclusively caught cod within statistical areas 513 and 514 (Figure 2); though there is some catch attributable to statistical area 521 by GOM MRIs. The PDT acknowledges the potential for a shift in effort from the South to the North based on the existing fishery behavior identified in the analysis, but also finds that this is not exclusively a unilateral shift and there is also potential for a shift from the North to the South. Additionally, this does provide evidence that MRIs with only GB PSC have historically participated in the GOM ACE lease market in order to potentially land and discard Atlantic cod within statistical area 515, which is the old GOM stock area and would now be the northern portion of the WGOM stock area.

The PDT notes that this statistical area of 515 is more offshore in nature and there is the potential that vessels with GB PSCs only were leasing cod to target other groundfish stocks within the Gulf of Maine. As such, the PDT is also evaluating the number of MRIs that may only have GB PSC for Atlantic cod but also have a GOM PSC for other groundfish stocks. Preliminary analysis suggests that Pollock, Haddock, and Monkfish represent the highest revenue species on the majority of GOM trips operating under MRIs that have little or no GOM cod PSC.

Table 10 - Average species landings (lbs.) and revenue within the WGOM broadstock area, declared groundfish trips, averages over fishing years 2019-2023.

Cod BSA	SPECIES	Species BSAs Included	AVG_LIVE_POUNDS	AVG_LANDED_POUNDS	AVG_REVENUE	REVENUE_PERCENT
WGOM	Non-Groundfish*	N/A	19,589,658	11,541,981	$13,061,522	26.4%
WGOM	Haddock	GB (partial); GOM (partial)	10,456,217	9,169,720	$12,605,306	25.4%
WGOM	Pollock	N/A	6,182,027	5,472,802	$6,781,577	13.7%
WGOM	Redfish	N/A	9,059,687	9,057,192	$5,372,163	10.8%
WGOM	White Hake	N/A	3,258,242	2,456,394	$3,962,200	8.0%
WGOM	Witch Flounder	N/A	1,431,906	1,431,585	$2,217,929	4.5%
WGOM	Cod	WGOM	999,055	853,661	$2,200,952	4.4%
WGOM	American Plaice	N/A	1,353,325	1,353,175	$2,180,109	4.4%
WGOM	Winter Flounder	GOM (partial); SNE/MA (partial)	267,047	266,817	$537,626	1.1%
WGOM	Yellowtail Flounder	CC/GOM (partial); SNE/MA (partial)	467,772	467,461	$401,180	0.8%
WGOM	Atlantic Halibut	N/A	39,837	34,757	$223,607	0.5%

Table 11 - Average species landings (lbs) and revenue within the GB broadstock area, declared groundfish trips, averages over fishing years 2019-2023.

Cod BSA	SPECIES	Species BSAs Included	AVG_LIVE_POUNDS	AVG_LANDED_POUNDS	AVG_REVENUE	REVENUE_PERCENT
GB	Haddock	GB (partial)	4,250,490	3,727,540	$4,534,206	32.0%
GB	Non-Groundfish*	N/A	3,418,111	2,091,834	$4,084,412	28.8%
GB	Winter Flounder	GB	536,283	536,230	$1,317,689	9.3%
GB	Pollock	N/A	1,057,298	936,893	$1,130,130	8.0%
GB	Redfish	N/A	1,222,503	1,221,226	$783,826	5.5%
GB	Witch Flounder	N/A	390,628	390,214	$628,746	4.4%
GB	American Plaice	N/A	405,229	405,224	$618,852	4.4%
GB	Cod	GB	318,065	271,753	$617,725	4.4%
GB	White Hake	N/A	366,941	274,327	$388,746	2.7%
GB	Atlantic Halibut	N/A	9,550	8,343	$54,395	0.4%
GB	Yellowtail Flounder	GB	4,173	4,076	$6,134	0.0%

Figure 2 - Map of total cod catch (landings and discards) in pounds represented by tile colors from 2021-2024 for all MRIs by group. Left: MRIs with both GB and GOM PSC, middle: MRIs with GB PSC only, right: MRIs with GOM PSC only. The color scale is capped at the 90th percentile of total catch. Old GOM and GB stock units are shown by blue and pink statistical areas, respectively.

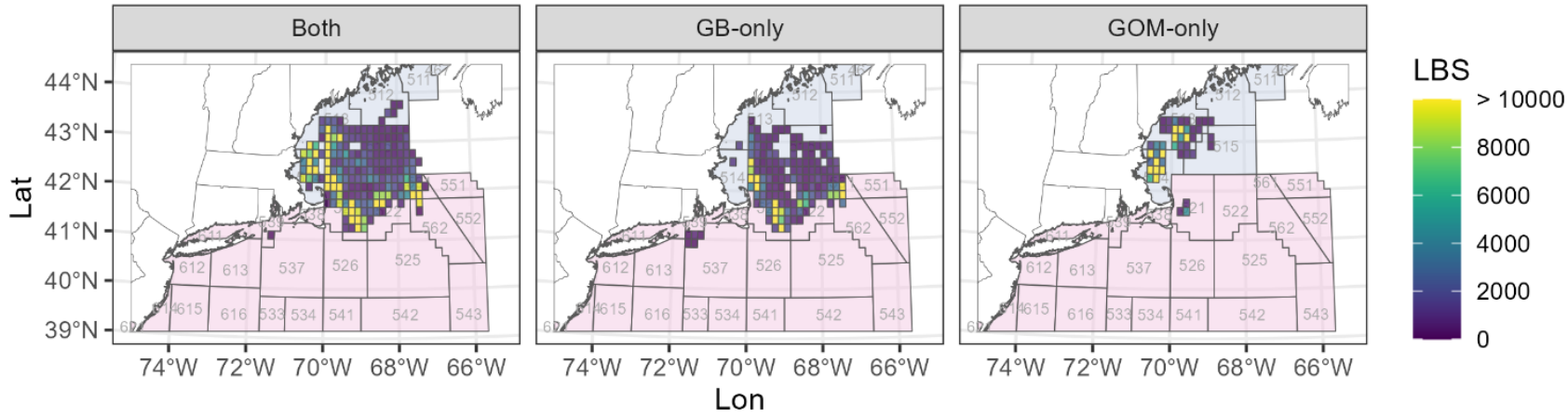
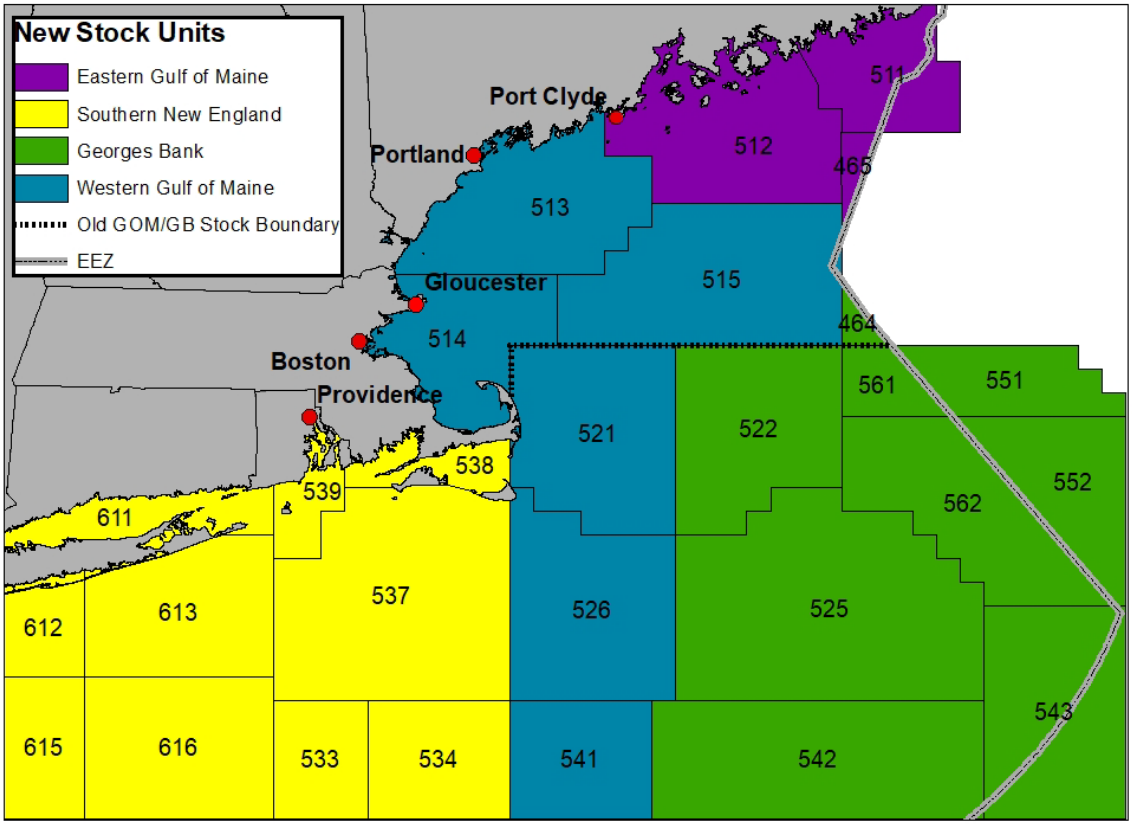


Figure 3 - New stock unit boundaries for the four new cod stocks along with the previous GOM/GB stock boundary outlined for reference. Note that Canadian catch is only included in the GB cod assessment



Attachment 1

Committee motion rationale spreadsheet

	COMMERCIAL SUB-ACL GOM	COMMERCIAL SUB-ACL GBW	GBE
2010	4,327	3,302	
2011	4,721	4,208	
2012	3,619	4,524	
2013	812	1,776	
2014	810	1,735	145
2015	201	1,748	121
2016	271	596	135
2017	271	521	143
2018	358	1,170	251
2019	350	1,514	182
2020	267	1,041	183
2021	262	1,045	182
2022	261	238	156
2023	267	364	131

GB / GOM Sub-ACL differences With EGB included 2014-2023 % GB to GOM		
76%	1	X
89%	1	X
125%	1	X
219%	2	X
232%	2	X
930%	9	X
270%	3	X
245%	2	X
397%	4	X
485%	5	X
458%	5	X
468%	5	X
149%	1	X
185%	2	X

9 Year Average of 4X

Table 1 from PDT memo			
	% of historical catch NWGOM	% of historical catch SWGOM	
2010	**75%**	25%	
2011	**70%**	30%	The Provision to allow ACE Conversion from GBE to GBW Cod began in FY 2014
2012	**79%**	21%	
2013	48%	52%	
2014	58%	42%	
2015	25%	76%	
2016	51%	49%	
2017	51%	49%	
2018	40%	60%	
2019	49%	51%	
2020	49%	51%	
2021	45%	55%	
2022	**78%**	22%	
2023	53%	47%	

New England Fishery Management Council
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Rick Bellavance, *Acting Chair* | Cate O'Keefe, PhD, *Executive Director*

Updated 9/12/24

MEMORANDUM

DATE: September 5, 2024

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: Atlantic cod fishery data analysis for Framework 69

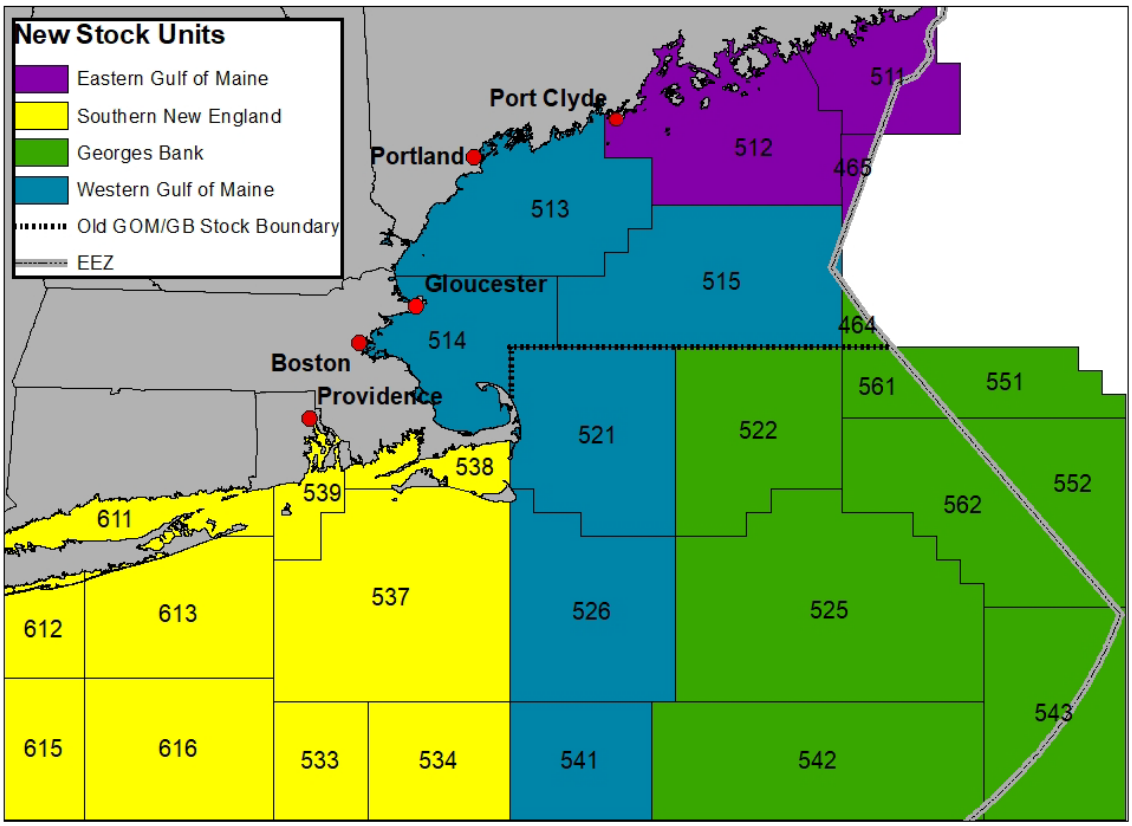
The Groundfish Plan Development Team (PDT) met as a sub-group on August 13, 2024, and as a whole on August 29, 2024, to continue discussing the Atlantic Cod Management Transition Plan analysis to support development of Phase 1 cod measures in Framework Adjustment 69.

Background

At their June 11, 2024, meeting, the Groundfish Committee tasked the PDT with additional analysis to support decision making and development of the "bridge approach" for setting catch advice for cod stocks for FY2025-FY2027 through Framework 69. The PDT addresses several of these tasking motions below.

Commercial and Recreational Fishery Data

The figure below provides the new stock unit boundaries for the four new cod stocks along with the previous GOM/GB stock boundary outlined for reference. Note that Canadian catch is only included in the GB cod assessment.



Analysis #1 – Cod catches by statistical area

The Committee passed the following motion at their June 11th meeting:

> *Task the Plan Development Team (PDT), for the purpose of (1) apportioning the North and South portions of WGOM and (2) determining recreational and commercial catches by statistical areas, to use recent years catch data (Fishing Year 2010 to 2022 broken down by fishing year).*

The PDT provides **commercia**l catches by statistical area annually from FY2010-2023, for each new stock area and for WGOM split into Northern (SRAs 513-515) and Southern (SRAs 521/526/541) in Attachment 1. Recreational catches are provided for the WGOM statistical areas in Attachment 2; however, these estimates are provided as numbers of fish, as recreational weight estimates for the new stock areas are under development.

The PDT calculated the percentage of catch in the Northern and Southern portions of WGOM using commercial catches only. This would have the recreational allocation be taken off the top prior to splitting the WGOM into North and South. **The PDT recommends for WGOM allocating to the recreational fishery first, using the percentage resulting from updating the FW59 methodology (see Analysis #2)** as this simplifies the process of splitting WGOM into

North and South, which is for the commercial fishery only for applying current potential sector contributions (PSCs). This is also more consistent with how the original GOM recreational allocation was made.

Table 1- Percentage of WGOM cod catch in the North (SRAs 513-515) and South (SRAs 521, 526, and 541).

Fishing Year	Percentage in NWGOM	Percentage in SWGOM
2010	0.748	0.252
2011	0.701	0.299
2012	0.786	0.214
2013	0.483	0.517
2014	0.583	0.417
2015	0.245	0.755
2016	0.510	0.490
2017	0.514	0.486
2018	0.401	0.599
2019	0.494	0.506
2020	0.487	0.513
2021	0.447	0.553
2022	0.778	0.222
2023	0.525	0.475
Average 2010-2023	0.550	0.450
5-year average (2019-2023)	0.546	0.454
3-year average (2021-2023)	0.583	0.417

Analysis #2– Recreational/commercial allocation split for WGOM area

The Committee passed the following motion at their June 11th meeting:

> *Move to task the Groundfish Plan Development Team with calculating as an option for a recreational sub-ACL for the WGOM stock, using the same method that was used to calculate the existing 37.5% (see Framework Adjustment 59) but using statistical areas that align with the new WGOM stock area.*

The PDT examined the following table from Framework 59:

Table 2- Gulf of Maine Cod Preliminary Evaluation of Rec/Com Allocation Using New MRIP Landings and Discards, and Updated Commercial Landings and Discards (2019 Assessment Update).

Year	Rec Landings (A+B1)	Rec Discard Mortality	Com Landings	Com Discard Mortality	Total Mortality	Rec Share
		(1,000's of fish)				
2001	975	207	1,168	591	2,941	0.402
2002	626	182	882	410	2,100	0.385
2003	532	153	844	417	1,946	0.352
2004	606	188	766	546	2,105	0.377
2005	742	270	832	225	2,070	0.489
2006	212	127	733	299	1,371	0.247
						0.375

The PDT updated this recreational/commercial allocation calculation for the entire WGOM stock area using the same method in Framework 59 with data from the WGOM cod 2024 Management Track Assessment (data provided in Attachment 3).

Table 3- Western Gulf of Maine Cod Preliminary Evaluation of Rec/Com Allocation (2024 Assessment).

Year	Rec Catch	Comm Catch	Total Catch	Rec Share
		(1,000's of fish)		
2001	1,203	4,328	5,531	0.217
2002	898	3,128	4,025	0.223
2003	700	2,119	2,819	0.248
2004	812	1,515	2,328	0.349
2005	1,039	1,434	2,473	0.420
2006	352	1,490	1,842	0.191
				0.275

This results in a WGOM cod recreational sub-ACL percentage of 27.5%. **The PDT recommends using the updated 27.5% for the WGOM recreational sub-ACL calculation.**

Analysis #3– For-hire VTR data in WGOM

The Committee also passed the following motion at their June 11th meeting:

> *Task the Plan Development Team to analyze VTR data for the for-hire fleet in the WGOM stock area by statistical reporting area for fishing years 2010 through 2022.*

The PDT provides for-hire VTR data in the WGOM stock area in Attachment 4. The PDT emphasizes the utility of VTR data for providing context and verifying trends in recreational for-hire activity, and cautions against overinterpreting or using the data directly. There is no well-defined way to verify any of the for-hire information provided on the VTRs. While the effort estimates provided on the VTRs (i.e., number of passengers) are incorporated into the MRIP for-hire effort estimates, catch on for-hire trips is estimated by MRIP intercept sampling of anglers on those trips and not the actual catch data provided on the VTRs. Thus, the VTR catch data is not used in either the assessments or catch/management advice.

Setting aside these caveats, there is additional for-hire effort seen in VTRs than what is seen in MRIP. For example, for-hire VTRs report catches in statistical area 521 in all years from FY2010-2022, while MRIP only has catch in FY2021 and FY2022 (see Attachment 2). However, the overall trends in WGOM for-hire activity from VTR reporting appear similar to what is seen in MRIP. The majority of catch comes from SRAs 513 and 514, with very little catch in 515, or any of the southern WGOM statistical areas (521, 526, and 541).

Table 4- For-hire VTR data for WGOM statistical areas, averages across FY2010-2022.

Stat Area	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	**Percentage**
	Averages FY2010-2022										
513	52	45	2449	1656	27095	5902	32997	73.7	8.0	81.8	**49%**
514	73	54	1588	1033	25209	3726	28934	68.6	5.1	73.7	**44%**
515	5	4	46	44	1512	1645	1783	4.1	0.4	4.5	**3%**
521	14	7	125	29	1291	93	1384	3.5	0.1	3.6	**2%**
526	6	2	58	7	1100	54	1154	3.0	0.1	3.1	**2%**
541	2	2	2	2	7.5	2.2	10	0.02	0.00	0.02	**0.01%**
TOTALS								**153**	**14**	**167**	

Commercial Cod Catch by Statistical Area

FY10 - FY23, in Metric Tons

	EGOM				WGOM North				WGOM South				WGOM	GB							SNE						Total
Fishing Year	Statistical Areas 465/511	465/511/512	512	Total	513	514	515	Total	521	521/526	526	Total	Total	464	522	522/525/542/543	525/542/543	561	561/562	562	Total	537	538/539	611	613	533/534/612/614+	Total	Grand Total
2010	0.2		17.1	17.2	868.7	2,593.1	192.9	3,654.6	1,231.1		0.6	1,231.6	4,886.3	1.9	703.7		304.2	208.5		31.6	1,249.9	34.8	127.5	6.0	3.0	1.3	172.7	6,326.2
2011	0.5		29.5	30.0	1,002.3	2,979.7	217.9	4,199.8	1,782.6		5.1	1,787.7	5,987.5	2.1	952.6		144.2	111.8		17.2	1,227.9	22.1	77.9	0.8	2.6	3.2	106.7	7,352.2
2012		9.4		9.4	494.3	1,450.2	103.6	2,048.1	555.5		1.0	556.6	2,604.6	3.2	725.2		25.8	27.9		7.4	789.6	29.3	98.6	1.3	2.4	0.4	132.1	3,535.8
2013	1.7		4.5	6.2	186.7	442.9	81.5	711.1	761.2		0.9	762.1	1,473.3	2.2	603.6		37.6	20.3		3.1	666.7	11.3	84.3	0.8	1.7	0.4	98.5	2,244.7
2014	0.7		3.1	3.8	189.0	326.1	119.2	634.3	447.2		6.4	453.6	1,087.9	0.7	759.7		39.1	64.5		4.0	867.9	12.8	28.9	0.2	3.6	1.5	47.0	2,006.5
2015	0.2		1.9	2.1	36.9	95.1	37.2	169.2	516.8		3.8	520.6	689.8	1.2	864.9		18.2	73.8		6.5	964.5	14.3	100.5	2.3	5.7	0.9	123.8	1,780.2
2016	0.6		3.4	4.0	46.9	155.7	47.9	250.6	240.0		1.2	241.2	491.8	2.0	187.1		6.7	70.7		5.7	272.3	10.4	42.5	1.1	3.5	0.2	57.7	825.7
2017	0.2		2.6	2.8	48.9	162.9	52.1	263.8	248.3		0.8	249.1	512.9	0.9	137.3		1.8	41.0		1.7	182.6	3.9	17.9	0.2	0.2	0.2	22.5	720.9
2018	0.4		3.8	4.2	67.7	174.2	66.8	308.7	459.7		2.0	461.6	770.3	0.7	246.4		5.6	103.4		3.1	359.2	4.4	9.2	0.1	3.8	0.0	17.5	1,151.3
2019	0.4		2.2	2.6	85.4	141.0	56.5	282.9	289.4		0.2	289.6	572.5	0.3	167.3		0.5	61.1		3.0	232.2	0.5	3.4	0.1	0.3	0.2	4.6	812.0
2020	0.2		1.2	1.4	48.7	119.1	53.5	221.4	232.0		0.9	232.8	454.2	0.4	122.7		1.3	57.9		0.1	182.4	0.7	3.5	0.1	1.2	0.1	5.7	643.7
2021		1.3		1.3	65.7	118.6	48.4	232.7		288.3		288.3	521.0	0.7	118.7		0.9		54.4		174.8	0.3	1.3	0.2	0.3	0.2	2.3	699.2
2022	1.1		0.8	1.9	89.7	127.8	34.1	251.6	71.7		0.0	71.7	323.3	0.6		45.9			28.4		74.9	0.7	2.1	0.5	0.3	0.1	3.7	403.8
2023	0.1		0.3	0.4	66.0	150.2	30.2	246.4		223.1		223.1	469.5	0.6	59.1			13.7		0.0	73.4	0.6	3.3	0.3	0.4	0.2	4.8	548.1

Area based on VTR-reported area if available, else area calculated from VTR lat/lon, else imputed
Areas grouped due to confidentiality
Commercial groundfish trips only

CAMS landing and estimated discard data as of 8/12/24
Greater Atlantic Regional Fisheries Office
August 12, 2024

Attachment 2 - WGOM recreational cod catch by statistical area

WGOM Recreational Landings (A+B1), numbers of fish

Fishing Year	513	514	521	526
2010	167,005	689,091		
2011	262,907	697,069		
2012	144,347	486,447		
2013	296,790	543,095		
2014	136,157	251,913		
2015	5,978	4,683		
2016	15,895	54,238		
2017	32,044	47,697		
2018	411	4,966		
2019	11,454	4,735		
2020	3,239	1,644		
2021	9,138	53,438	17,306	
2022	3,051	26,614		
2023	10,370	16,066		
2024		31		
	1,098,786	2,881,727	17,306	0

WGOM Recreational Discard Mortality (B2 x .165), numbers of fish

Fishing Year	513	514	521	526
2010	54,126	310,573		
2011	105,862	166,000		
2012	74,943	88,005		
2013	68,348	228,072		
2014	58,191	132,818		
2015	119,454	52,236		
2016	94,188	188,948		
2017	81,964	284,293		
2018	92,702	99,870		
2019	42,897	32,671		
2020	32,337	58,567		
2021	38,538	45,019		
2022	23,550	55,677	178	
2023	43,449	44,458		
2024	76	600		
	930,624	1,787,805	178	0

Total WGOM Recreational Mortality (A+B1+(B2 x.165)), numbers of fish

Fishing Year	513	514	521	526
2010	221,131	999,663		
2011	368,768	863,070		
2012	219,289	574,452		
2013	365,138	771,167		
2014	194,349	384,731		
2015	125,432	56,919		
2016	110,083	243,186		
2017	114,008	331,990		
2018	93,112	104,836		
2019	54,351	37,406		
2020	35,576	60,211		
2021	47,676	98,456	17,306	
2022	26,601	82,291	178	
2023	53,820	60,524		
2024	76	630		
	2,029,410	4,669,532	17,484	0

Percentage of WGOM Recreational Mortality by Year

Fishing Year	513	514	521	526
2010	18.11	81.89		
2011	29.94	70.06		
2012	27.63	72.37		
2013	32.13	67.87		
2014	33.56	66.44		
2015	68.79	31.21		
2016	31.16	68.84		
2017	25.56	74.44		
2018	47.04	52.96		
2019	59.23	40.77		
2020	37.14	62.86		
2021	29.17	60.24	10.59	
2022	24.39	75.45	0.16	
2023	47.07	52.93		
2024	10.71	89.29		
	30.18	69.45	0.26	

Source: MRIP

Attachment 3 - WGOM commercial and recreational cod catch

WGOM Commericial Cod Catch

Year	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9+	Total	1,000s
2001	6	0	570763	2088188	939056	504812	130562	64288	11325	18998	4327997	4328
2002	505	35074	116572	880436	1290572	414241	245089	92082	31298	21830	3127699	3128
2003	38584	23322	142386	163213	595226	802230	212692	85022	30881	25540	2119094	2119
2004	2554	80623	83098	515153	184823	307141	222881	60306	32998	25765	1515342	1515
2005	6021	15502	133868	108669	709881	88520	213279	100566	29050	28582	1433939	1434
2006	801	23557	57969	589829	275697	385899	25520	71628	34949	24013	1489861	1490

WGOM Recreational Cod Catch

Year	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9+	Total	1,000s
2001	56	2104	178298	594211	238829	130207	37120	16463	1785	3615	1202685	1203
2002	235	21121	41536	309208	380467	96168	32464	11215	2990	2174	897578	898
2003	287	14279	77085	68738	222318	222346	46361	24782	11773	12181	700150	700
2004	0	27271	57720	324625	98644	146529	87150	25632	18429	26158	812159	812
2005	0	9066	165904	106786	476964	34803	114531	85768	29427	15982	1039231	1039
2006	176	16352	30740	147895	55079	70489	4331	13206	8160	5338	351767	352

Source: 2024 Management Track Assessment

Table 1. For-hire VTR Activity in Statistical Area 513

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	75	69	3,467	2,664	103,760	8,548	112,308	282.4	11.6	294.0
2011	70	62	3,107	2,253	59,025	7,032	66,057	160.6	9.6	170.2
2012	65	59	3,341	2,360	58,645	5,815	64,460	159.6	7.9	167.5
2013	69	62	3,313	2,365	79,014	7,684	86,698	215.0	10.5	225.5
2014	65	60	2,878	1,983	34,810	5,626	40,436	94.7	7.7	102.4
2015	54	40	2,162	1,194	173	4,195	4,368	0.5	5.7	6.2
2016	45	38	2,229	1,505	5,312	9,354	14,666	14.5	12.7	27.2
2017	43	35	2,089	1,293	335	9,443	9,778	0.9	12.8	13.8
2018	46	40	1,945	1,300	437	5,289	5,726	1.2	7.2	8.4
2019	42	36	1,953	1,335	1,548	5,158	6,706	4.2	7.0	11.2
2020	38	31	1,657	783	2,152	1,547	3,699	5.9	2.1	8.0
2021	35	27	1,901	1,151	3,218	2,796	6,014	8.8	3.8	12.6
2022	33	27	1,800	1,347	3,807	4,246	8,053	10.4	5.8	16.1
Avg	52	45	2,449	1,656	27,095	5,902	32,997	73.7	8.0	81.8

Table 2. For-hire VTR Activity in Statistical Area 514

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	115	102	2,730	2,182	90,487	8,078	98,565	246.3	11.0	257.3
2011	110	93	2,580	2,172	86,847	8,891	95,738	236.4	12.1	248.5
2012	94	78	2,180	1,848	54,230	3,372	57,602	147.6	4.6	152.2
2013	85	75	1,800	1,589	58,144	3,548	61,692	158.2	4.8	163.1
2014	80	62	1,587	1,287	27,680	1,871	29,551	75.3	2.5	77.9
2015	58	29	1,076	474	17	1,860	1,877	0.0	2.5	2.6
2016	58	40	1,292	750	2,808	3,997	6,805	7.6	5.4	13.1
2017	58	44	1,246	667	985	3,180	4,165	2.7	4.3	7.0
2018	59	39	1,054	554	368	3,007	3,375	1.0	4.1	5.1
2019	50	32	850	475	1,599	1,915	3,514	4.4	2.6	7.0
2020	58	34	1,289	426	1,700	1,739	3,439	4.6	2.4	7.0
2021	61	34	1,462	505	1,531	3,017	4,548	4.2	4.1	8.3
2022	64	40	1,501	503	1,315	3,960	5,275	3.6	5.4	9.0
Avg	73	54	1,588	1,033	25,209	3,726	28,934	68.6	5.1	73.7

Table 3. For-hire VTR Activity in Statistical Area 515

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod	Total Mortality of Cod
					(numbers of fish)			(mt)		
2010	3	3	72	72	10,124	354	10,478	27.6	0.5	28.0
2011	8	8	46	46	3,476	230	3,706	9.5	0.3	9.8
2012	5	5	51	51	1,281	112	1,393	3.5	0.2	3.6
2013	4	4	14	14	1,171	70	1,241	3.2	0.1	3.3
2014	9	9	38	37	2,939	91	3,030	8.0	0.1	8.1
2015	8	5	41	37	-	374	374	-	0.5	0.5
2016	4	3	59	57	593	793	1,386	1.6	1.1	2.7
2017	8	6	38	34	-	372	372	-	0.5	0.5
2018	5	4	41	36	6	289	295	0.0	0.4	0.4
2019	< 3	< 3	65	59	21	353	374	0.1	0.5	0.5
2020	< 3	< 3	57	52	5	156	161	0.0	0.2	0.2
2021	< 3	< 3	48	43	-	246	246	-	0.3	0.3
2022	3	< 3	33	31	38	90	128	0.1	0.1	0.2
Avg	5	4	46	44	1,512	1,645	1,783	4.1	0.4	4.5

Table 4. For-hire VTR Activity in Statistical Area 521

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	23	8	132	40	6,774	182	6,956	18.4	0.2	18.7
2011	22	9	108	25	1,469	112	1,581	4.0	0.2	4.2
2012	17	7	90	23	424	60	484	1.2	0.1	1.2
2013	14	7	75	22	468	51	519	1.3	0.1	1.3
2014	16	5	110	17	318	58	376	0.9	0.1	0.9
2015	13	7	95	32	624	88	712	1.7	0.1	1.8
2016	11	7	55	42	2,623	281	2,904	7.1	0.4	7.5
2017	12	7	73	24	1,594	100	1,694	4.3	0.1	4.5
2018	10	6	100	21	340	42	382	0.9	0.1	1.0
2019	11	6	171	33	524	51	575	1.4	0.1	1.5
2020	10	6	180	26	466	52	518	1.3	0.1	1.3
2021	11	6	192	35	768	90	858	2.1	0.1	2.2
2022	10	4	240	32	386	43	429	1.1	0.1	1.1
Avg	14	7	125	29	1,291	93	1,384	3.5	0.1	3.6

Table 5. For-hire VTR Activity in Statistical Area 526

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	3	< 3	20	7	2,878	85	2,963	7.8	0.1	7.9
2011	8	< 3	19	7	2,192	39	2,231	6.0	0.1	6.0
2012	4	< 3	18	5	893	8	901	2.4	0.0	2.4
2013	< 3	-	< 3	-	-	-	-	-	-	-
2014	< 3	-	< 3	-	-	-	-	-	-	-
2015	< 3	< 3	24	5	1,339	34	1,373	3.6	0.0	3.7
2016	-	-	-	-	-	-	-	-	-	-
2017	4	3	49	20	2,260	107	2,367	6.2	0.1	6.3
2018	8	7	63	16	1,745	163	1,908	4.7	0.2	5.0
2019	11	< 3	109	10	403	105	508	1.1	0.1	1.2
2020	11	3	209	11	870	68	938	2.4	0.1	2.5
2021	11	3	150	12	1,046	24	1,070	2.8	0.0	2.9
2022	11	3	96	4	680	64	744	1.9	0.1	1.9
Avg	6	2	58	7	1,100	54	1,154	3.0	0.1	3.1

Table 6. For-hire VTR Activity in Statistical Area 541

Fishing Year	Total Number of Vessels Reporting Trips	Number of Vessels Reporting Trips with Cod Catch	Total Number of Reported Trips	Number of Reported Trips with Cod Catch	Harvest of Cod	Discard Mortality of Cod (numbers of fish)	Total Mortality of Cod	Harvest of Cod	Discard Mortality of Cod (mt)	Total Mortality of Cod
2010	< 3	< 3	< 3	< 3	20	7	27	0.1	0.0	0.1
2011	4	3	4	3	33	9	42	0.1	0.0	0.1
2012	< 3	-	< 3	-	-	-	-	-	-	-
2013	< 3	< 3	< 3	< 3	45	12	57	0.1	0.0	0.1
2014	-	-	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	-	-	-	-	-
2018	-	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-	-
2021	< 3	-	< 3	-	-	-	-	-	-	-
2022	< 3	-	< 3	-	-	-	-	-	-	-
Avg	2	2	2	2	8	2	10	0.0	0.0	0.02