

Background

On 2023-05-26, the Mid-Atlantic Fisheries Council (MAFMC) requested a scenario analysis of the impacts on SBRM allocated sea days if river herring species were included as a 15th SBRM species group. The MAFMC specifically requested:

“A what-if analysis of what would happen to observer coverage if alewife and blueback herring were included as an additional species group in the SBRM seaday allocation process.”

After a detailed discussion with Jason Didden (MAFMC) on 2023-05-19 regarding the request. The following specifications were used to fulfill the request.

- Follow same standard SBRM prioritization rules using the penultimate cell approach that is used in the annual analysis
- Perform “what if” analysis using the output from the 2023 SBRM analysis only, using the same estimated sea days needed and budget
- Include blueback herring and alewife as a single RHERR species group (“river herring” was also included)
- RHERR treated as 15th SBRM species group used in sea days allocation process
- Perform prioritization steps used in 2023 with RHERR included through Step 12

Methods

The output from the annual 2023 SBRM analysis¹ was used to perform the RHERR scenario analysis. Observer and VTR data from July 2021 – June 2022 were used to estimate the sea days needed to achieve a 30% Coefficient of Variation (CV) for the discard estimation for each of the 14 SBRM species groups as well as the new, 15th river herring (RHERR) species group investigated in this analysis. See McAfee and Wigley 2023 for more methodological details on how the estimated sea days for each fleet are derived.

RHERR was previously added as an internal investigative species group in the annual SBRM analysis, but not included in the official report; therefore, sea day estimates were available for this species group from the 2023 SBRM output produced early in 2023. RHERR was not included as a species group in the 2023 SBRM assignment of sea days needed for fish and the sea day prioritization steps that allocates funded sea days to each fleet.

The RHERR scenario analysis described in this report required integrating the number of sea days needed for RHERR into the matrix of fleets and SBRM species groups (Table 2), and re-estimating the sea days needed (“Official 2023 Sea Days Needed”) for

¹ At the time of writing this report, the technical memos for the 2023 SBRM analysis are still in pre-publication status and therefore all results from these analyses are still considered preliminary.

each fleet based on which species group was driving the sea days needed, and is shown in the “RHERR Modified 2023 Sea Days Needed” (Table 2). The sea day prioritization process was then performed with “RHERR Modified 2023 Sea Days Needed” as a replacement for “2023 Sea Days Needed for FISH” (Table 3B, step 1). Steps 1-12 as described in NEFSC and GARFO 2020 were then reapplied to the RHERR modified “2023 Sea Days Needed for FISH” to determine any impacts on sea day allocations for March 2023-April 2024 due to the inclusion of RHERR as a SBRM species group. The major steps (a subset of steps 1-12) are shown for the official 2023 SBRM analysis in Table 3A and the RHERR scenario analysis in Table 3B. Step 9 is the most critical of these steps because it applies the penultimate cell approach to reduce sea days when a funding shortfall occurs, as was the case in 2023. NEFMC, MAFMC, and NMFS 2015 describes the penultimate cell approach as follows:

“In order to prioritize the available sea days, using this alternative, the species group sea days needed would be organized in descending order within each fishing mode for all modes, and the highest difference in needed sea days between adjacent species groups within the fishing modes would be identified. The sea days associated with the species group that represents the highest number of observer sea days from that fishing mode would be removed, with the constraint that the differences are taken in order within a fleet. Therefore, that fishing mode would then use the second highest (penultimate) projected number of observer sea days. This process of eliminating the highest difference in projected number of observer sea days within a fleet would be repeated, as necessary, across all fishing modes until the total number of observer sea days needed is within that year’s funding limit.”

After performing steps 1-12, the allocated sea days for March 2023 – April 2024 resulting from step 12 were compared for both the official 2023 SBRM and the RHERR scenario analyses to identify fleets that experienced changes in sea day allocations due to the inclusion of RHERR as a SBRM species group.

Results

The inclusion of RHERR as a species group in the RHERR scenario analysis caused allocated sea days (step 12) to shift among 4 otter trawl fleets (Table 4): Mid-Atlantic (MA) small mesh (row 5), MA large mesh (row 6), New England (NE) small mesh (row 7), and NE large mesh (row 8). All other fleets experienced no change in allocated sea days. Sea days need for fish (step 1) and combined sea days needed for fish and turtles (step 5) did not change for any fleets. The penultimate cell approach produced sea day reductions in the same number of fleets (n=5) under the RHERR scenario analysis (rows 5, 6, 7, 34, and 54), however the fleets that experienced sea day reductions differed from those that were reduced in the 2023 official SBRM analysis (rows 6, 7, 8, 34, and 54).

The redistribution of sea days in the RHERR scenario analysis caused a general shift in allocated sea days from the MA to NE otter trawl fleets. The most pronounced shifts occurred in the MA small mesh otter trawl fleet that lost 374 sea days and the NE large mesh otter trawl fleet that gained 506 sea days (Table 4).

References

- McAfee B, Wigley SE. 2023. 2023 discard estimation, precision, and sample size analyses for 14 federally managed species in the waters off the northeastern United States. US Dept Commer, in prep.
- New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), National Marine Fisheries Service (NMFS). 2015. [Standardized Bycatch Reporting Methodology: An Omnibus Amendment](#) to the Fishery Management Plans of the Mid-Atlantic and New England Regional Fishery Management Councils. March 2015. 361 p.
- Northeast Fisheries Science Center (NEFSC), Greater Atlantic Regional Fisheries Office (GARFO) 2020. 2020 Standardized bycatch reporting methodology annual discard report with observer sea day allocation. [NOAA Technical Memorandum NMFS-NE-262](#). 30 p.

Table 1. List of the 14 fish and invertebrate species groups included in official SBRM analysis and additional 15th river herring species group used in scenario analysis (shaded light grey).

Species/Group	Scientific Name
ATLANTIC HERRING (HERR)	<i>Clupea harengus</i>
ATLANTIC SALMON (SAL)	<i>Salmo salar</i>
BLUEFISH (BLUE)	<i>Pomatomus saltatrix</i>
FLUKE - SCUP - BLACK SEA BASS (FSB)	
Black sea bass	<i>Centropristis striata</i>
Fluke	<i>Paralichthys dentatus</i>
Scup	<i>Stenotomus chrysops</i>
LARGE MESH GROUND FISH (GFL)	
Acadian redfish	<i>Sebastes fasciatus</i>
American plaice	<i>Hippoglossoides platessoides</i>
Atlantic cod	<i>Gadus morhua</i>
Atlantic halibut	<i>Hippoglossus</i>
Atlantic wolffish	<i>Anarhichas lupus</i>
Haddock	<i>Melanogrammus aeglefinus</i>
Ocean pout	<i>Zoarces americanus</i>
Pollock	<i>Pollachius virens</i>
White hake	<i>Urophycis tenuis</i>
Windowpane flounder	<i>Scophthalmus aquosus</i>
Winter flounder	<i>Pseudopleuronectes americanus</i>
Witch flounder	<i>Glyptocephalus cynoglossus</i>
Yellowtail flounder	<i>Limanda ferruginea</i>
MONKFISH (MONK)	<i>Lophius americanus</i>
RED DEEPSEA CRAB (RCRAB)	<i>Chaceon quinquegens</i>
SEA SCALLOP (SCAL)	<i>Placopecten magellanicus</i>
SKATE COMPLEX² (SKATE)	Rajidae
Barndoor skate	<i>Dipturus laevis</i>
Clearnose skate	<i>Raja eglanteria</i>
Little skate	<i>Leucoraja erinacea</i>
Rosette skate	<i>Leucoraja garmani</i>
Smooth skate	<i>Malacoraja senta</i>
Thorny skate	<i>Amblyraja radiata</i>
Winter skate	<i>Leucoraja ocellata</i>
SMALL MESH GROUND FISH (GFS)	
Offshore hake	<i>Merluccius albidus</i>
Red hake	<i>Urophycis chuss</i>
Silver hake	<i>Merluccius bilinearis</i>
SPINY DOGFISH (DOG)	<i>Squalus acanthias</i>
SQUID³ - BUTTERFISH - MACKEREL (SBM)	
Atlantic chub mackerel	<i>Scomber colias</i>
Atlantic mackerel	<i>Scomber scombrus</i>
Butterfish	<i>Peprilus triacanthus</i>
Longfin inshore squid	<i>Doryteuthis (Amerigo) pealeii</i>
Northern shortfin squid	<i>Illex illecebrosus</i>
SURFLCLAM - OCEAN QUAHOG⁴ (SCOQ)	
Surfclam	<i>Spisula solidissima</i>
Ocean quahog	<i>Arctica islandica</i>
TILEFISH⁵ (TILE)	
Blueline tilefish	<i>Caulolatilus microps</i>
Golden tilefish	<i>Lopholatilus chamaeleonticeps</i>
RIVER HERRING⁶ (RHERR)	
Alewife	<i>Alosa pseudoharengus</i>
Blueback herring	<i>Alosa aestivalis</i>

² Skate complex is composed of 7 species as well as skate, unknown, and little/winter mixed skate. Individual species are not summarized separately.

³ Squid, unclassified is included in this species group. Longfin inshore squid and northern shortfin squid are also known as Loligo squid and Illex squid, respectively.

⁴ In this analysis, surfclams and ocean quahogs compose the species group and are not reported separately.

⁵ Tilefish, unclassified is included in this species group.

⁶ River herring, unclassified is included in this species group.

Table 2. The number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for the 14 fish and invertebrate species groups included in official SBRM analysis and the additional 15th River herring species group used in scenario analysis (shaded light grey) based on July 2021 through June 2022 data. Bold red font indicates basis for fleet sea days. “P” indicates fleets with “pilot” designation. Species group abbreviations are given in Table 1. Taken from Table 6B in McAfee and Wigley 2023.

Row	Fleet Gear Type	Access Area	Trip	Region	Mesh Size	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	RHERR	Pilot Days	Min Pilot Days	Official 2023 Sea Days Needed	RHERR Modified 2023 Sea Days Needed	Pilot	
1	Longline, Bottom	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	
2	Longline, Bottom	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	14	14	14	
3	Hand Line	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	14	14	14	
4	Hand Line	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	15	15	15	
5	Otter Trawl	OPEN	all	MA	sm	0	0	0	0	0	804	0	0	1,388	565	490	474	0	0	0	882	104	31	1,388	1388	
6	Otter Trawl	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	94	192	354	0	0	0	0	146	34	354	354	
7	Otter Trawl	OPEN	all	NE	sm	0	0	0	0	0	309	0	283	892	425	381	302	0	0	0	455	158	41	892	892	
8	Otter Trawl	OPEN	all	NE	lg	0	0	0	0	0	0	276	185	168	138	516	782	0	0	0	690	242	33	782	782	
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	MA	lg	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
10	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	P
11	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	lg	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	P
12	Otter Trawl, Scallop	OPEN	GEN	MA	lg	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	P
13	Otter Trawl, Twin	OPEN	all	MA	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40	40	
14	Otter Trawl, Twin	OPEN	all	MA	lg	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	P
15	Otter Trawl, Twin	OPEN	all	NE	sm	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	P
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	P
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	P
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	P
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	P
20	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	P
21	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	72	0	0	0	0	0	94	94	94	94	
22	Otter Trawl, Shrimp	OPEN	all	MA	sm	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	P
23	Otter Trawl, Other	OPEN	all	MA	sm	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	P
24	Otter Trawl, Other	OPEN	all	MA	lg	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	P
25	Otter Trawl, Other	OPEN	all	NE	sm	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	P
26	Otter Trawl, Other	OPEN	all	NE	lg	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	P
27	Haul Seine, Beach	OPEN	all	NE	all	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	P
28	Floating Trap	OPEN	all	MA	all	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	P
29	Floating Trap	OPEN	all	NE	all	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	P
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	13	13	13	
31	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	0	93	0	0	0	0	0	27	13	93	93	
32	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xlg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	13	13	13	
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	P
34	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	501	0	0	0	0	0	31	18	501	501	
35	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xlg	0	0	0	0	0	0	75	0	0	82	0	0	0	0	0	0	52	18	82	82	

Table 2, continued. The number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for the 14 fish and invertebrate species groups included in official SBRM analysis and the additional 15th River herring species group used in scenario analysis (shaded light grey) based on July 2021 through June 2022 data. Bold red font indicates basis for fleet sea days. "P" indicates fleets with "pilot" designation. Species group abbreviations are given in Table 1. Taken from Table 6B in McAfee and Wigley 2023.

Row	Fleet Gear Type	Access Area	Trip	Region	Mesh Size	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	RHERR	Pilot Days	Min Pilot Days	Official 2023 Sea Days Needed	RHERR Modified 2023 Sea Days Needed	Pilot	
36	Purse Seine	OPEN	all	MA	all	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	P
37	Purse Seine	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	10	10	10	
38	Dredge, Scallop	AA	GEN	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	15	15	15	
39	Dredge, Scallop	AA	GEN	NE	all	0	0	0	0	0	0	91	0	0	0	0	0	0	0	0	0	107	16	91	91	
40	Dredge, Scallop	AA	LIM	MA	all	0	0	0	0	0	0	101	0	0	128	0	0	0	0	0	0	96	93	128	128	
41	Dredge, Scallop	AA	LIM	NE	all	0	0	0	0	350	0	132	0	153	181	0	0	0	0	0	0	266	101	350	350	
42	Dredge, Scallop	OPEN	GEN	MA	all	0	0	0	0	0	0	28	0	0	13	0	0	0	0	0	0	58	25	28	28	
43	Dredge, Scallop	OPEN	GEN	NE	all	0	0	0	0	0	0	93	0	0	0	0	0	0	0	0	0	64	19	93	93	
44	Dredge, Scallop	OPEN	LIM	MA	all	0	0	0	0	0	0	189	0	0	39	0	0	0	0	0	0	107	107	189	189	
45	Dredge, Scallop	OPEN	LIM	NE	all	0	0	0	0	316	0	169	227	717	198	552	513	0	0	0	0	177	111	717	717	
46	Trawl, Midwater	all	all	NE	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	23	23	23	
47	Pots and Traps, Other	OPEN	all	NE	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
48	Pots and Traps, Fish	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	13	13	13	
49	Pots and Traps, Fish	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	13	13	13	
50	Pots and Traps, Eel	OPEN	all	NE	all	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	P
51	Pots and Traps, Conch	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	12	12	12	
52	Pots and Traps, Conch	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	12	12	12	
53	Pots and Traps, Lobster	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	20	20	20	
54	Pots and Traps, Lobster	OPEN	all	NE	all	0	0	0	0	0	0	0	0	188	0	0	0	0	0	0	0	415	18	188	188	
55	Pots and Traps, Crab	OPEN	all	NE	all	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	105	105	105	105	
56	Beam Trawl	OPEN	all	MA	sm	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
57	Beam Trawl	OPEN	all	NE	sm	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
58	Beam Trawl	OPEN	all	NE	lg	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	P
59	Scottish Seine	OPEN	all	MA	sm	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	P
60	Dredge, Other	OPEN	all	MA	all	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	P
61	Dredge, Other	OPEN	all	NE	all	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	P
62	Dredge, Mussel	OPEN	all	NE	all	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	P
63	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	0	0	0	0	0	0	47	0	0	0	0	0	0	0	0	0	63	25	47	47	
64	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	19	19	19	
					Totals	778	778	778	792	1,444	1,89	1,97	1,47	4,28	2,641	3,57	3,20	778	778	2,805	3,593	2,016	7,238	7,238		

Table 3A. The official 2023 SBRM number of sea days needed to monitor fish/invertebrates (FISH), combined species groups (COMBINED) by fleet (Steps 1 through 5); the number of funded sea days for April 2023 through March 2024 (Steps 6 and 7); the differences between needed and funded days (Step 8); and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process (Step 9) and allocated sea days (Step 12).

Fleet						Step 1	Step 2	Step 5	Step 9.2						Step 9.3		Step 9.4	Step 9.5	Step 12	
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2023 Sea Days Needed for FISH	2023 Sea Days Needed for FISH ADJUSTED	2023 Sea Days Needed COMBINED	Sea day differences between adjacent species groups within a row (red font indicated values used in Step 9.3)						Sea day differences, in descending order with fleet constraint	Cumulative reduction of sea days	2023 Sea Days PRIORITIZED (Penultimate)	2023 Sea Days PRIORITIZED (Penultimate)	Sea Days Allocated for April 2023 - March 2024 (TOTAL)	
1	Longline, Bottom	OPEN	all	MA	all	92	92	92	0							483	483	92	92	92
2	Longline, Bottom	OPEN	all	NE	all	14	14	14	0							467	950	14	14	14
3	Hand Line	OPEN	all	MA	all	14	14	14	0							266	1,216	14	14	14
4	Hand Line	OPEN	all	NE	all	15	15	15	0							240	1,456	15	15	15
5	Otter Trawl	OPEN	all	MA	sm	1,388	1,388	1,483	95	584	239	75	16	443		170	1,626	1,483	1,483	1,483
6	Otter Trawl	OPEN	all	MA	lg	354	354	487	133	162	98	60				133	1,759	193	256	256
7	Otter Trawl	OPEN	all	NE	sm	892	892	892	467	44	72	7	19	242		161 of 162	425	425	425	
8	Otter Trawl	OPEN	all	NE	lg	782	782	782	266	240	91	17	30	105			276	276	276	
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	MA	lg	3	0	0	0								0	0	0	
10	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	51	51	51	0								51	51	51	
11	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	lg	11	11	11	0								11	11	11	
12	Otter Trawl, Scallop	OPEN	GEN	MA	lg	21	21	22												
13	Otter Trawl, Twin	OPEN	all	MA	sm	40	40	40	0								40	40	40	
14	Otter Trawl, Twin	OPEN	all	MA	lg	40	40	40	0								40	40	40	
15	Otter Trawl, Twin	OPEN	all	NE	sm	44	44	44	0								44	44	44	
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	23	0	0	0								0	0	0	
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	13	0	0	0								0	0	0	
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	30	0	0	0								0	0	0	
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	39	0	0	0								0	0	0	
20	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	104	0	0	0								0	0	0	
21	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	94	94	94	0								94	94	94	
22	Otter Trawl, Shrimp	OPEN	all	MA	sm	65	0	0	0								0	0	0	
23	Otter Trawl, Other	OPEN	all	MA	sm	40	0	0	0								0	0	0	
24	Otter Trawl, Other	OPEN	all	MA	lg	44	0	0	0								0	0	0	
25	Otter Trawl, Other	OPEN	all	NE	sm	58	0	0	0								0	0	0	
26	Otter Trawl, Other	OPEN	all	NE	lg	22	0	0	0								0	0	0	
27	Haul Seine, Beach	OPEN	all	NE	all	6	0	0	0								0	0	0	
28	Floating Trap	OPEN	all	MA	all	10	0	0	0								0	0	0	
29	Floating Trap	OPEN	all	NE	all	14	14	14	0								14	0	0	
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	13	13	13	0								13	13	13	
31	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	93	93	93	80								93	93	93	
32	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xlg	13	13	13	0								13	13	13	
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	7	7	7	0								7	7	7	
34	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	501	501	501	483								18	18	18	
35	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xlg	82	82	82	7	57							82	82	82	
36	Purse Seine	OPEN	all	MA	all	13	13	13	0								13	0	0	
37	Purse Seine	OPEN	all	NE	all	10	10	10	0								10	10	10	
38	Dredge, Scallop	AA	GEN	MA	all	15	15	15												68
39	Dredge, Scallop	AA	GEN	NE	all	91	91	91												572
40	Dredge, Scallop	AA	LIM	MA	all	128	128	128												
41	Dredge, Scallop	AA	LIM	NE	all	350	350	350												
42	Dredge, Scallop	OPEN	GEN	MA	all	28	28	28												150
43	Dredge, Scallop	OPEN	GEN	NE	all	93	93	93												
44	Dredge, Scallop	OPEN	LIM	MA	all	189	189	189												906
45	Dredge, Scallop	OPEN	LIM	NE	all	717	717	717												
46	Trawl, Midwater	all	all	NE	sm	23	23	23	0								23	23	23	

Table 3A, continued. The official 2023 SBRM number of sea days needed to monitor fish/invertebrates (FISH), combined species groups (COMBINED) by fleet (Steps 1 through 5); the number of funded sea days for April 2023 through March 2024 (Steps 6 and 7); the differences between needed and funded days (Step 8); and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process (Step 9) and allocated sea days (Step 12).

Fleet						Step 1	Step 2	Step 5	Step 9.2					Step 9.3		Step 9.4	Step 9.5	Step 12
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2023 Sea Days Needed for FISH	2023 Sea Days Needed for FISH ADJUSTED	2023 Sea Days Needed COMBINED	Sea day differences between adjacent species groups within a row (red font indicated values used in Step 9.3)					Sea day differences, in descending order with fleet constraint	Cumulative reduction of sea days	2023 Sea Days PRIORITIZED (Penultimate)	2023 Sea Days PRIORITIZED (Penultimate)	Sea Days Allocated for April 2023 - March 2024 (TOTAL)
47	Pots and Traps, Other	OPEN	all	NE	all	3	13	0	0							0	0	0
48	Pots and Traps, Fish	OPEN	all	MA	all	13	10	13	0							13	13	13
49	Pots and Traps, Fish	OPEN	all	NE	all	13	15	13	0							13	13	13
50	Pots and Traps, Eel	OPEN	all	NE	all	45	91	0	0							0	0	0
51	Pots and Traps, Conch	OPEN	all	MA	all	12	128	12	0							12	12	12
52	Pots and Traps, Conch	OPEN	all	NE	all	12	350	12	0							12	12	12
53	Pots and Traps, Lobster	OPEN	all	MA	all	20	28	20	0							20	20	20
54	Pots and Traps, Lobster	OPEN	all	NE	all	188	93	188	170							18	18	18
55	Pots and Traps, Crab	OPEN	all	NE	all	105	189	105	0							105	105	105
56	Beam Trawl	OPEN	all	MA	sm	3	717	3	0							3	0	0
57	Beam Trawl	OPEN	all	NE	sm	3	23	0	0							0	0	0
58	Beam Trawl	OPEN	all	NE	lg	9	0	0	0							0	0	0
59	Scottish Seine	OPEN	all	MA	sm	8	13	8	0							8	0	0
60	Dredge, Other	OPEN	all	MA	all	16	13	16	0							16	0	0
61	Dredge, Other	OPEN	all	NE	all	24	0	0	0							0	0	0
62	Dredge, Mussel	OPEN	all	NE	all	9	12	9	0							9	0	0
63	Dredge, Ocean Quahog/Surflclam	OPEN	all	MA	all	47	12	47	22							47	47	47
64	Dredge, Ocean Quahog/Surflclam	OPEN	all	NE	all	19	20	19	0							19	19	19
	MMPA coverage																	350
	MMPA analysis																	166
	ESA coverage																	45
					Total	7,238	6,697	6,926										
Step 6		Agency Fleets (Sea Days Needed)						5,293										
		Industry Fleets (Sea Days Needed)						1,633										
Step 7		Agency Fleets (Sea Days Funded)						3,373										
		Agency Fleets (Sea Days Funded)						561										
		Industry Fleets (Sea Days Funded)						1,696										
Step 8		Agency Fleet Difference						-1,920										
		Industry Fleet Difference						63										
																3,373	3,373	5,630

KEY: Agency-funded fleets	Industry-funded fleets
Fleets identified as "erroneous"	Fleets with Northeast Fisheries Observer Program (NEFOP) Limitation
Steps used in sea day allocation	Fleets with reduction in sea days
Fleets identified as "not applicable"	

Table 3B. Scenario analysis of adding RHERR species group to 2023 SBRM number of sea days needed to monitor fish/invertebrates (FISH), combined species groups (COMBINED) by fleet (Steps 1 through 5); the number of funded sea days for April 2023 through March 2024 (Steps 6 and 7); the differences between needed and funded days (Step 8); and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process (Step 9) and allocated sea days (Step 12).

Fleet						Step 1	Step 2	Step 5	Step 9.2						Step 9.3		Step 9.4	Step 9.5	Step 12	
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2023 Sea Days Needed for FISH	2023 Sea Days Needed for FISH ADJUSTED	2023 Sea Days Needed COMBINED	Sea day differences between adjacent species groups within a row (red font indicated values used in Step 9.3)						Sea day differences, in descending order with fleet constraint	Cumulative reduction of sea days	2023 Sea Days PRIORITIZED (Penultimate)	2023 Sea Days PRIORITIZED (Penultimate)	Sea Days Allocated for April 2023 - March 2024 (TOTAL)	
1	Longline, Bottom	OPEN	all	MA	all	92	92	92	0							483	483	92	92	92
2	Longline, Bottom	OPEN	all	NE	all	14	14	14	0							437	920	14	14	14
3	Hand Line	OPEN	all	MA	all	14	14	14	0							170	1,090	14	14	14
4	Hand Line	OPEN	all	NE	all	15	15	15	0							133	1,223	15	15	15
5	Otter Trawl	OPEN	all	MA	sm	1,388	1,388	1,483	95	506	78	239	75	16	162	1,385	1,046	1,109	1,109	1,109
6	Otter Trawl	OPEN	all	MA	lg	354	354	487	133	162	98	60			98	1,483	94	94	94	
7	Otter Trawl	OPEN	all	NE	sm	892	892	892	437	30	44	72	7	19	95	1,578	455	455	455	
8	Otter Trawl	OPEN	all	NE	lg	782	782	782	92	174	240	91	17	30	342 of 506	1,920	782	782	782	
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	MA	lg	3	0	0	0								0	0	0	
10	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	51	51	51	0								51	51	51	
11	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	lg	11	11	11	0								11	11	11	
12	Otter Trawl, Scallop	OPEN	GEN	MA	lg	21	21	22												
13	Otter Trawl, Twin	OPEN	all	MA	sm	40	40	40	0								40	40	40	
14	Otter Trawl, Twin	OPEN	all	MA	lg	40	40	40	0								40	40	40	
15	Otter Trawl, Twin	OPEN	all	NE	sm	44	44	44	0								44	44	44	
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	23	0	0	0								0	0	0	
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	13	0	0	0								0	0	0	
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	30	0	0	0								0	0	0	
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	39	0	0	0								0	0	0	
20	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	104	0	0	0								0	0	0	
21	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	94	94	94	0								94	94	94	
22	Otter Trawl, Shrimp	OPEN	all	MA	sm	65	0	0	0								0	0	0	
23	Otter Trawl, Other	OPEN	all	MA	sm	40	0	0	0								0	0	0	
24	Otter Trawl, Other	OPEN	all	MA	lg	44	0	0	0								0	0	0	
25	Otter Trawl, Other	OPEN	all	NE	sm	58	0	0	0								0	0	0	
26	Otter Trawl, Other	OPEN	all	NE	lg	22	0	0	0								0	0	0	
27	Haul Seine, Beach	OPEN	all	NE	all	6	0	0	0								0	0	0	
28	Floating Trap	OPEN	all	MA	all	10	0	0	0								0	0	0	
29	Floating Trap	OPEN	all	NE	all	14	14	14	0								14	0	0	
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	13	13	13	0								13	13	13	
31	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	93	93	93	80								93	93	93	
32	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xl	13	13	13	0								13	13	13	
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	7	7	7	0								7	7	7	
34	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	501	501	501	483								18	18	18	
35	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xl	82	82	82	7	57							82	82	82	
36	Purse Seine	OPEN	all	MA	all	13	13	13	0								13	0	0	
37	Purse Seine	OPEN	all	NE	all	10	10	10	0								10	10	10	
38	Dredge, Scallop	AA	GEN	MA	all	15	15	15												68
39	Dredge, Scallop	AA	GEN	NE	all	91	91	91												572
40	Dredge, Scallop	AA	LIM	MA	all	128	128	128												
41	Dredge, Scallop	AA	LIM	NE	all	350	350	350												
42	Dredge, Scallop	OPEN	GEN	MA	all	28	28	28												150
43	Dredge, Scallop	OPEN	GEN	NE	all	93	93	93												
44	Dredge, Scallop	OPEN	LIM	MA	all	189	189	189												906
45	Dredge, Scallop	OPEN	LIM	NE	all	717	717	717												
46	Trawl, Midwater	all	all	NE	sm	23	23	23	0								23	23	23	

Table 3B, continued. Scenario analysis of adding RHERR species group to 2023 SBRM number of sea days needed to monitor fish/invertebrates (FISH), combined species groups (COMBINED) by fleet (Steps 1 through 5); the number of funded sea days for April 2023 through March 2024 (Steps 6 and 7); the differences between needed and funded days (Step 8); and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process (Step 9) and allocated sea days (Step 12).

Fleet						Step 1	Step 2	Step 5	Step 9.2					Step 9.3		Step 9.4	Step 9.5	Step 12	
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2023 Sea Days Needed for FISH	2023 Sea Days Needed for FISH ADJUSTED	2023 Sea Days Needed COMBINED	Sea day differences between adjacent species groups within a row (red font indicated values used in Step 9.3)					Sea day differences, in descending order with fleet constraint	Cumulative reduction of sea days	2023 Sea Days PRIORITIZED (Penultimate)	2023 Sea Days PRIORITIZED (Penultimate)	Sea Days Allocated for April 2023 - March 2024 (TOTAL)	
47	Pots and Traps, Other	OPEN	all	NE	all	3	0	0	0							0	0	0	
48	Pots and Traps, Fish	OPEN	all	MA	all	13	13	13	0							13	13	13	
49	Pots and Traps, Fish	OPEN	all	NE	all	13	13	13	0							13	13	13	
50	Pots and Traps, Eel	OPEN	all	NE	all	45	0	0	0							0	0	0	
51	Pots and Traps, Conch	OPEN	all	MA	all	12	12	12	0							12	12	12	
52	Pots and Traps, Conch	OPEN	all	NE	all	12	12	12	0							12	12	12	
53	Pots and Traps, Lobster	OPEN	all	MA	all	20	20	20	0							20	20	20	
54	Pots and Traps, Lobster	OPEN	all	NE	all	188	188	188	170							18	18	18	
55	Pots and Traps, Crab	OPEN	all	NE	all	105	105	105	0							105	105	105	
56	Beam Trawl	OPEN	all	MA	sm	3	3	3	0							3	0	0	
57	Beam Trawl	OPEN	all	NE	sm	3	0	0	0							0	0	0	
58	Beam Trawl	OPEN	all	NE	lg	9	0	0	0							0	0	0	
59	Scottish Seine	OPEN	all	MA	sm	8	8	8	0							8	0	0	
60	Dredge, Other	OPEN	all	MA	all	16	16	16	0							16	0	0	
61	Dredge, Other	OPEN	all	NE	all	24	0	0	0							0	0	0	
62	Dredge, Mussel	OPEN	all	NE	all	9	9	9	0							9	0	0	
63	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	47	47	47	22							47	47	47	
64	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	19	19	19	0							19	19	19	
	MMPA coverage																	350	
	MMPA analysis																	166	
	ESA coverage																	45	
					Total	7,238	6,697	6,926								3,373	3,373	5,630	
	Step 6	Agency Fleets (Sea Days Needed)						5,293											
		Industry Fleets (Sea Days Needed)						1,633											
	Step 7	Agency Fleets (Sea Days Funded)						3,373											
		Industry Fleets (Sea Days Funded)						561											
	Step 8	Agency Fleet Difference						-1,920											
		Industry Fleet Difference						63											

KEY: Agency-funded fleets	Industry-funded fleets
Fleets identified as "erroneous"	Fleets with Northeast Fisheries Observer Program (NEFOP) Limitation
Steps used in sea day allocation	Fleets with reduction in sea days
Fleets identified as "not applicable"	

Table 4. Difference in allocated sea days (Step 12) between official 2023 SBRM and RHERR scenario analysis for April 2023 through March 2024. Fleets with different total allocated sea days shown in red (bold).

Fleet						Step 12(A)	Step 12(B)	Sea Day Difference
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	Official Sea Days Allocated for April 2023 March 2024 (TOTAL)	RHERR Modified Sea Days Allocated for April 2023 March 2024 (TOTAL)	RHERR Modified – Official Sea Days for April 2023 March 2024
1	Longline, Bottom	OPEN	all	MA	all	92	92	0
2	Longline, Bottom	OPEN	all	NE	all	14	14	0
3	Hand Line	OPEN	all	MA	all	14	14	0
4	Hand Line	OPEN	all	NE	all	15	15	0
5	Otter Trawl	OPEN	all	MA	sm	1483	1,109	-374
6	Otter Trawl	OPEN	all	MA	lg	256	94	-162
7	Otter Trawl	OPEN	all	NE	sm	425	455	30
8	Otter Trawl	OPEN	all	NE	lg	276	782	506
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	MA	lg	0	0	0
10	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	51	51	0
11	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	lg	11	11	0
12	Otter Trawl, Scallop	OPEN	GEN	MA	lg			
13	Otter Trawl, Twin	OPEN	all	MA	sm	40	40	0
14	Otter Trawl, Twin	OPEN	all	MA	lg	40	40	0
15	Otter Trawl, Twin	OPEN	all	NE	sm	44	44	0
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	0	0	0
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	0	0	0
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	0	0	0
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	0	0	0
20	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	0	0	0
21	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	94	94	0
22	Otter Trawl, Shrimp	OPEN	all	MA	sm	0	0	0
23	Otter Trawl, Other	OPEN	all	MA	sm	0	0	0
24	Otter Trawl, Other	OPEN	all	MA	lg	0	0	0
25	Otter Trawl, Other	OPEN	all	NE	sm	0	0	0
26	Otter Trawl, Other	OPEN	all	NE	lg	0	0	0
27	Haul Seine, Beach	OPEN	all	NE	all	0	0	0
28	Floating Trap	OPEN	all	MA	all	0	0	0
29	Floating Trap	OPEN	all	NE	all	0	0	0
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	13	13	0
31	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	93	93	0
32	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xlg	13	13	0
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	7	7	0
34	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	18	18	0
35	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xlg	82	82	0
36	Purse Seine	OPEN	all	MA	all	0	0	0
37	Purse Seine	OPEN	all	NE	all	10	10	0
38	Dredge, Scallop	AA	GEN	MA	all	68	68	0
39	Dredge, Scallop	AA	GEN	NE	all	572	572	0
40	Dredge, Scallop	AA	LIM	MA	all			
41	Dredge, Scallop	AA	LIM	NE	all			
42	Dredge, Scallop	OPEN	GEN	MA	all	150	150	0
43	Dredge, Scallop	OPEN	GEN	NE	all			
44	Dredge, Scallop	OPEN	LIM	MA	all	906	906	0
45	Dredge, Scallop	OPEN	LIM	NE	all			
46	Trawl, Midwater	all	all	NE	sm	23	23	0

Table 4, continued. Difference in allocated sea days (Step 12) between official 2023 SBRM and RHERR scenario analysis for April 2023 through March 2024.

Fleet						Step 12(A)	Step 12(B)	Sea Day Difference
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	Official Sea Days Allocated for April 2023 March 2024 (TOTAL)	RHERR Modified Sea Days Allocated for April 2023 March 2024 (TOTAL)	RHERR Modified – Official Sea Days for April 2023 March 2024
47	Pots and Traps, Other	OPEN	all	NE	all	0	0	0
48	Pots and Traps, Fish	OPEN	all	MA	all	13	13	0
49	Pots and Traps, Fish	OPEN	all	NE	all	13	13	0
50	Pots and Traps, Eel	OPEN	all	NE	all	0	0	0
51	Pots and Traps, Conch	OPEN	all	MA	all	12	12	0
52	Pots and Traps, Conch	OPEN	all	NE	all	12	12	0
53	Pots and Traps, Lobster	OPEN	all	MA	all	20	20	0
54	Pots and Traps, Lobster	OPEN	all	NE	all	18	18	0
55	Pots and Traps, Crab	OPEN	all	NE	all	105	105	0
56	Beam Trawl	OPEN	all	MA	sm	0	0	0
57	Beam Trawl	OPEN	all	NE	sm	0	0	0
58	Beam Trawl	OPEN	all	NE	lg	0	0	0
59	Scottish Seine	OPEN	all	MA	sm	0	0	0
60	Dredge, Other	OPEN	all	MA	all	0	0	0
61	Dredge, Other	OPEN	all	NE	all	0	0	0
62	Dredge, Mussel	OPEN	all	NE	all	0	0	0
63	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	47	47	0
64	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	19	19	0
	MMPA coverage					350	350	0
	MMPA analysis					166	166	0
	ESA coverage					45	45	0
					Total	5,630	5,630	0