Proposed 2013 Observer Sea Day Allocation

Prepared

for the

Northeast Region Coordinating Council

by

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Introduction

The Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment was implemented on 27 February 2008 (NMFS 2008, NEFMC 2007) and subsequently vacated by the US District Court for the District of Columbia and remanded back to National Marine Fisheries Service (NMFS) on 15 September 2011. On 29 December 2011, NMFS removed the regulations implementing the SBRM (NMFS 2011). Nevertheless, the need remains to annually allocate observer coverage among fisheries prosecuted in the Northeast region. The numbers of sea days needed to monitor 14 federally managed fish/invertebrate species groups and one species of sea turtles have been estimated by the Northeast Fisheries Science Center (NEFSC). Based upon the funding available for observer coverage, the numbers of sea days have been allocated by fleet for the April 2013 through March 2014 period.

Number of Sea Days Needed

Sample size analyses were conducted to estimate the numbers of sea days needed to monitor 14 federally managed fish and invertebrate species groups and one sea turtle species (Table 1). For fish/invertebrate species groups, the numbers of sea days needed to achieve a 30% coefficient of variation (CV) of total discards for each species group were derived for 56 fleets using data collected during the June 2011 through July 2012 and employing the estimation methods described in Wigley et al. (in press). From the 2013 sea day analysis in Wigley et al. (in press), a total of 11,499 sea days is needed for the 14 fish and invertebrate species groups (Table 2).

For loggerhead turtles, the numbers of sea days needed to achieve a 30% CV of turtle discards were estimated by fishery, defined as a managed fish or invertebrate species landed on vessels using bottom otter trawl, sink gillnet, or scallop dredge gear in the Mid-Atlantic region (see Murray 2012, and Murray (in press). The maximum amount of projected coverage across all the fisheries was considered the desired level of sampling to monitor turtle discards for that gear type. Roughly 4,800 days are needed across bottom trawl fisheries (Murray 2012), roughly 2,600 days are needed across sink gillnet fisheries (based on CVs in Murray, in press), and approximately 1,300 days are needed in the scallop dredge fishery, based on loggerhead bycatch precision levels after chain mats were implemented in the fishery (Murray 2012). Estimates of sea day needs for turtles are revised when new bycatch estimates are published for a particular gear type (approximately every five years). Sea day requirements for non-loggerhead turtle species (i.e., greens, Kemp's ridleys, and leatherbacks) are not currently estimated because too few have been observed to estimate total bycatch and CVs for these species (Murray 2012). Because observers document all protected species interactions on trips, monitoring of other turtles species will still occur via days intended to monitor fish or loggerheads.

The numbers of sea days needed to achieve a 30% CV associated with the Mid-Atlantic[1] turtle gear types and fish/invertebrate fleets are given below.

Turtle Gear Types and Fish Fleets	Sea Days	
	Loggerhead Turtles	**Fish/Invertebrates Species Groups**
MA Otter Trawl and Scallop Trawl Rows 5, 6, 9, 10, 11, and 12	4,838	1,875
MA Gillnet Rows 22, 23, and 24	2,593	161
MA Scallop Dredge Rows 30, 32, 34, and 36	1,293	411

The numbers of sea days needed for the combined fish/invertebrates and turtle species groups were derived as followed:

- If the sum of the sea days needed for fish/invertebrates species groups of the corresponding fish fleets exceeded the sea days needed for the turtle gear type, then the sea days needed for fish/invertebrate sea day was used.

- If the number of sea days needed for turtles for the gear type exceeded the sum of the sea days needed for fish/invertebrates of the corresponding fish fleets, then the sea days needed for turtles were distributed according to the proportion of sea days needed for fish/invertebrates of the corresponding fish fleets.

A total of 17,776 sea days are needed for fish/invertebrates and loggerhead turtles (COMBINED; Table 3) during the April 2013 through March 2014 period.

Funding available for the April 2013 to March 2014 period

Based upon the fiscal year 2013 enacted budget for the NEFSC's Northeast Fisheries Observer Program (NEFOP), agency funding is available for 11,421 days[2]. Based upon an observer set-aside compensation rate analysis, there is industry funding for 2,402 days. Hence, 13,823 days (11,421 + 2,402) are available for observer coverage (Table 3).

[1] In the sea turtle sample size analysis, Mid-Atlantic refers to areas fished west of 70^{o}W. In the fish/invertebrate sample size analysis, Mid-Atlantic refers to region based on port of departure from Connecticut and southward. Although it is recognized that port of departure may differ from the area fished, an odds ratio analysis conducted to evaluate broad-scale spatial coherence indicated a strong relationship between area fished (statistical area) and port of departure (region). Based upon this analysis, the 'Mid-Atlantic' stratifications used in two analyses were considered similar.

[2] These days include 749 unused agency-funded sea days from the previous funding period.

Below is a summary of the two funding source categories: agency-funded and industry-funded. Within the agency-funded category, there are six sub-categories.

- **Agency-funded**: The funding sources for the 11,421 agency-funded sea days include: Atlantic Coast (1,282 days), New England Groundfish (6,673 sea days), National Observer Program and National Catch Share Program collectively fund At-Sea Monitoring (ASM; 2,601 days), Reducing Bycatch (55 days), and Marine Mammal Protection Act (MMPA; 810 days). Each funding source has implicit funding constraints (days targeted for specific species and/or data category).

    - 1,136 agency-funded days (810 + 326) are applicable to protected species[3] only.

        - 810 MMPA days and 326 days of the 1,282 Atlantic Coast days are associated with trips having sampling protocols that are specific to protected species (marine mammals, sea turtles, Endangered Species Act [ESA] listed fish species) and are not applicable for non-ESA listed fish and invertebrates. However, these days will provide observer coverage for sea turtles and ESA-listed fish species above that which is allocated.

    - 10,285 agency-funded days (11,421 – 1,136) are applicable for all species.

        - Of the 10,285 agency-funded days, 100 sea days have been reserved to support the training of new observers. These sea days are partially funded by New England Groundfish (50 days) and National Catch Share Program (50 days).

        - Of the 10,285 agency-funded days, 20 sea days have been reserved as discovery days to address emerging questions of scientific and management interest as the year progresses. These sea days are funded by the New England Groundfish.

    - Projected costs: $1200/day for NEFOP and ASM days

- **Industry-funded**: The number of industry-funded sea days available depends upon the total expected budget from the Research Set Aside (RSA) program and the increase in landings allowed for vessels carrying observers (i.e., the compensation rate). Based upon projected landings and expected prices, the RSA program generates funds in support of discard monitoring of the scallop fleets. A compensation rate analysis was undertaken to support observer coverage of the 12 industry-funded scallop fleets. The sea days for the 12 industry-funded fleets are presented in Rows 9-12 and 30-37 (Table 3).

    - Based upon the compensation rate analysis, a total of 2,402 sea days can be funded: 1,869 days for Open areas, 183 days for Hudson Canyon Access Area (HC), 116 days for Closed Area I (CAI), 159 days for Closed Area II (CAII), and 75 days in the Nantucket Lightship Access Area (NLAA).

[3] In this document, protected species refers to marine mammals, sea turtles, and ESA-listed fish.

- The industry-funded schedule runs March 1 through February, a 12-month period that is shifted one month from the NEFOP sea day schedule of April to March.

- Bulletins describing the 2013 set-aside compensation rate calculations and scallop management measures are available at: http://www.nero.noaa.gov/nr/2013/March/fy13obscomratecalsum.pdf and http://www.nero.noaa.gov/nr/2013/February/13scalfr2013measuresphl.pdf

- Coverage of the 12 fleets depends on industry activity among these fleets; hence, the allocated sea days represent the maximum coverage (i.e., caps).

- Limited Access General Category (LAGC) open area fleets are now included as industry-funded fleets (Rows 11, 34, and 35; Table 3). Industry-funded coverage for these fleets will begin in May 2013.

- Of the 1,869 days for the open areas, there are 356 days for LAGC fleets (Rows 11, 34, and 35; Table 3) and 1,513 days for Limited Access fleets (Rows 12, 36, and 37; Table 3). Additionally, 6 agency-funded days have been allocated to LAGC fleets for the month of April.

- Projected costs: the cost to industry for at-sea portion is $775/day for industry-funded fleets. Additional agency funds are needed for training and certification of observers and data processing.

Summary of sea days based on the agency budget and the compensate rate analysis, by funding source.

Funding Source	**Sea Days**
Agency-funded Total	**11,421**
Agency-funded applicable to all species	10,285
Agency-funded applicable to protected species only	1,136
Industry-funded Total applicable to all species	**2,402**
Total	**13,823**

Allocation of Sea Days by Fleet

The 13,823 funded sea days were allocated to 32 of the 56 fleets (Table 3) according to the funding constraints associated with each funding source to support stock assessments and compliance monitoring. Over all fleets, a funding shortfall of 3,953 days (17,776 – 13,823; Table 3) is expected.

Within the 12 industry-funded fleets, a shortfall of 436 sea days is expected. The combined sea days needed for these fleets (2,838 days) exceed the 2,408 days (2,402 industry-funded days and 6

agency-funded days for the month of April) associated with Open areas (Rows 11, 12, 34, 35, 36, and 37), Mid-Atlantic Access Areas (Hudson Canyon Access Area; Rows 9, 10, 30, and 32) and New England Access Areas (Closed Area I, Closed Area II, and Nantucket Lightship; Rows 31 and 33; Table 3). The sea days for the industry-funded fleets will be assigned via the call-in system[4]. The sea day coverage will depend on industry activity during the April 2013 through March 2014 period and will be capped as described above. Although the combined sea days needed for these fleets are greater than the sea days funded via compensation rate analysis, this does not mean that the expected precision for *all* species will exceed 30% CV.

Within the agency-funded fleets, a shortfall of 3,517 days (14,938 – 11,421; Table 3) is expected. Currently, the SBRM Omnibus Amendment is under revision to address the deficiencies found by the Court in the prioritization process. Alternatives associated with the SBRM funding trigger and the prioritization approach have been developed and the SBRM Omnibus Amendment will be subsequently voted on by the Councils. Hence, a status quo approach has been used this year.

The basis of these sea day allocations is made in an *ad-hoc* fashion to meet the sea days needed for the various species groups (derived from the sea day analysis for fish and turtles) but works within the budgetary constraints. The ad-hoc approach uses the previous year's fishing patterns, considers the Councils' expectations for coverage to monitor the mid-water trawl and purse seine fleets associated with the herring fishery (the expectation is the greater of either 20% coverage or 30% CV), the Councils' previous comments to monitor the small-mesh fleets for butterfish and river herring, and the need to monitor Mid-Atlantic fleets in general.

The agency-funded fleets with an * or ** (Table 3) indicate that some or all of the observer coverage will be assigned via the Pre-Trip Notification System (PTNS; see Palmer et al. in press). This means that some or all of the observer coverage within each of these fleets will depend upon industry activity during the April 2013 through March 2014 period. The sea days for agency-funded fleets have been proportionally allocated based on the previous year's activity, and thus should be considered provisional. The total number of sea days for these fleets will be capped at 7,629 days. Of the 7,629 days, 7,125 days will be allocated for groundfish monitoring via the PTNS (2,551 days are for At-Sea Monitoring coverage and 4,574 days for NEFOP coverage) and 504 days will be allocated for monitoring *Loligo* trips via the PTNS (235 days for Mid-Atlantic small-mesh otter trawl and 269 days for New England small-mesh otter trawl). There are three fleets (Mid-Atlantic small-mesh otter trawl, Mid-Atlantic large-mesh otter trawl fleet, and the New England small-mesh otter trawl fleet) that will have sea day coverage assigned via the PTNS and the NEFOP sea day schedule. All other fleets will have sea days assigned via the NEFOP sea day schedule.

It is important to note that for all fleets where allocated sea days are less than the number of sea days needed, the expected precision for some species group may exceed a 30% CV. However, it does not mean that the expected precision for each species group will exceed 30%.

[4] For more information on the call-in system for industry-funded scallop program, see http://www.nero.noaa.gov/nr/2013/February/13scalfr2013measuresphl.pdf

Further improvements in precision of discard estimates are limited by total funding, and also by constraints on funding by region or species group. The Atlantic States Marine Fisheries Commission (ASMFC) has secured funding through the Atlantic Coast Cooperative Statistical Program (ACCSP) to support observer coverage (approximately 400 days) for small-mesh otter trawl fleets in the Mid-Atlantic region. These sea days will provide observer coverage for all species above that allocated in this report.

The sample size analysis conducted by Wigley et al. (in press) derived the expected precision (CV) of the discard estimates for various species groups over a range of sample sizes for each of the species groups that were not filtered out by the importance filter (Table 7, Figure 3; Wigley et al. in press). Deriving the expected CV assumes the variance of the discard estimate is constant over a range of sample sizes (number of trips). The analysis was based upon the observed trips in the Northeast Fisheries Observer Program database during the July 2011 through June 2012 time period (Table 2; Wigley et al. in press). Some of these observed trips were funded by Atlantic States Marine Fisheries Commission (ASMFC). Observed trips funded by ASMFC occurred in the Mid-Atlantic small mesh otter trawl (Row 5), Mid-Atlantic large mesh otter trawl (Row 6), New England small mesh otter trawl (Row 7), and New England large mesh otter trawl (Row 8) fleets (Appendix Table 2). The majority of the ASMFC-funded observed trips occurred in the Mid-Atlantic small mesh otter trawl (Row 5) fleet.

The relationships between the sample size and the CV for the four fleets are given in Appendix Figure 1; two sample sizes, non-ASMFC funded trips and total trips, have been denoted. The difference in the CV of the discard estimate for a species group within a fleet was obtained by subtracting the expected CV of the discard estimate using the number of non-ASMFC funded trips from the CV of the discard estimate derived using total observed trips. The differences in expected CVs ranged between < 1% in the NE large mesh otter trawl fleet (Row 8) and 11% for red crab in the MA small mesh otter trawl fleet (Row 5). Of the 28 differences calculated, there were four species groups for which the increased number of trips lowered the CV (increased the precision) below 30%; without the additional ASMFC-funded trips, the expected CV would have been above 30%. The four species groups are: small mesh groundfish (GFS), squid-butterfish-mackerel (SBM), large mesh groundfish (GFL) in the MA small mesh otter trawl (Row 5) fleet, and fluke-scup-black sea bass (FSB) in the NE small mesh otter trawl (Row 7) fleet (Appendix Table 2; Appendix Figure 1). There were six species group-fleet combinations where the difference in expected CV was not derived because the sea days associated with these cells were filtered out via the importance filter. The importance filter is a standardized protocol to eliminate the sea days associated with cells where the discards are a minor component of the total discards for that species group and where the discards are a minor component of the total catch (fishing mortality) for that species group. The river herring species group has been included in the analysis presented here but is not reported in Wigley et al. (in press) where only federally managed species groups are presented.

References

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Table 1. List of the 14 fish and invertebrate species groups and one species of sea turtles (in bold), with species group abbreviations in parentheses, and the species comprising these groups, corresponding to the 13 federal fishery management plans in the Northeast region.

ATLANTIC SALMON (SAL)
BLUEFISH (BLUE)
FLUKE - SCUP - BLACK SEA BASS (FSB)
Black Sea Bass
Fluke
Scup
HERRING, ATLANTIC (HERR)
LARGE MESH GROUNDFISH (GFL)
American Plaice
Atlantic Cod
Atlantic Halibut
Atlantic Wolffish
Haddock
Ocean Pout
Pollock
Redfish
White Hake
Windowpane Flounder
Winter Flounder
Witch Flounder
Yellowtail Flounder
MONKFISH (MONK)
RED CRAB (RCRAB)
SEA SCALLOP (SCAL)
SKATE COMPLEX (SKATE)
Barndoor Skate
Clearnose Skate
Little Skate
Rosette Skate
Smooth Skate
Thorny Skate
Winter Skate
SMALL MESH GROUNDFISH (GFS)
Offshore Hake
Red Hake
Silver Hake
SPINY DOGFISH (DOG)
SQUID - BUTTERFISH - MACKEREL (SBM)
Atlantic Mackerel
Butterfish
Illex Squid
Loligo Squid
SURFCLAM - OCEAN QUAHOG (SCOQ)
Surfclam
Ocean Quahog
TILEFISH (TILE)
LOGGERHEAD TURTLE (TURS)

Table 2. The number of sea days needed to achieve a 30% CV based on the variance of the total composite discard for each the fish/invertebrate species groups, the number of pilot sea days, the minimum pilot sea days, and 2013 sea days (the maximum number of sea days needed for each fleet) based on July 2011 through June 2012 data. Bold red font indicates basis for fleet sea days; species group and fleet abbreviations are given in Table 1 and Appendix Table 1, respectively.

Row	Gear Type	Access Area	Trip Category	Region	Mesh	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	Pilot Days	Min. Pilot Days	2013 Sea Days Needed
1	Longline	OPEN	all	MA	all	60	60	60	60	60	60	60	60	60	60	60	60	60	60	**60**	60	60
2	Longline	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	**126**	0	0	0	26	15	126
3	Hand Line	OPEN	all	MA	all	84	84	84	84	84	84	84	84	84	84	84	84	84	84	**84**	13	84
4	Hand Line	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	**14**	14
5	Otter Trawl	OPEN	all	MA	sm	0	0	0	**1,408**	0	458	336	409	480	225	583	212	0	0	154	29	1,408
6	Otter Trawl	OPEN	all	MA	lg	0	0	0	0	0	0	0	200	0	69	224	**341**	0	0	245	27	341
7	Otter Trawl	OPEN	all	NE	sm	0	0	0	0	0	233	0	431	360	**530**	233	500	0	0	170	31	530
8	Otter Trawl	OPEN	all	NE	lg	0	0	0	**5,290**	0	0	220	109	300	194	266	496	0	0	460	34	5,290
9	Scallop Trawl	AA	GEN	MA	all	16	16	16	16	16	16	16	16	16	16	16	16	16	16	**16**	16	16
10	Scallop Trawl	AA	LIM	MA	all	12	12	12	12	12	12	12	12	12	12	12	12	12	12	**12**	12	12
11	Scallop Trawl	OPEN	GEN	MA	all	25	25	25	25	25	25	25	25	25	25	25	25	25	25	**25**	21	25
12	Scallop Trawl	OPEN	LIM	MA	all	73	73	73	73	73	73	73	73	73	73	73	73	73	73	**73**	73	73
13	Otter Trawl, Ruhle	OPEN	all	MA	lg	30	30	30	30	30	30	30	30	30	30	30	30	30	30	**30**	30	30
14	Otter Trawl, Ruhle	OPEN	all	NE	sm	74	74	74	74	74	74	74	74	74	74	74	74	74	74	**74**	74	74
15	Otter Trawl, Ruhle	OPEN	all	NE	lg	94	94	94	94	94	94	94	94	94	94	94	94	94	94	**94**	94	94
16	Otter Trawl, Haddock Separator	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	**3**	3
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	**106**	106
18	Shrimp Trawl	OPEN	all	MA	all	70	70	70	70	70	70	70	70	70	70	70	70	70	70	**70**	66	70
19	Shrimp Trawl	OPEN	all	NE	all	0	0	0	0	0	0	0	0	**18**	0	0	0	0	0	35	13	18
20	Floating Trap	OPEN	all	MA	all	9	9	9	9	9	9	9	9	9	9	9	9	9	9	**9**	9	9
21	Floating Trap	OPEN	all	NE	all	9	9	9	9	9	9	9	9	9	9	9	9	9	9	**9**	9	9
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	42	42	42	42	42	42	42	42	42	42	42	42	42	42	**42**	12	42
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	0	**36**	0	0	0	46	13	36
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	0	0	0	0	0	0	**83**	0	0	0	0	0	0	0	67	14	83
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	11	11	11	11	11	11	11	11	11	11	11	11	11	11	**11**	11	11
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	0	0	0	0	0	0	0	**69**	0	0	65	0	0	0	159	15	69
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	0	0	0	0	0	0	**165**	0	0	72	95	0	0	0	102	18	165
28	Purse Seine	OPEN	all	MA	all	11	11	11	11	11	11	11	11	11	11	11	11	11	11	**11**	9	11
29	Purse Seine	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	**20**	20
30	Scallop Dredge	AA	GEN	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	**22**	22
31	Scallop Dredge	AA	GEN	NE	all	23	23	23	23	23	23	23	23	23	23	23	23	23	23	**23**	23	23
32	Scallop Dredge	AA	LIM	MA	all	0	0	0	0	0	0	**157**	0	0	149	0	0	0	0	111	99	157
33	Scallop Dredge	AA	LIM	NE	all	0	0	0	0	**392**	0	108	0	0	91	0	152	0	0	128	102	392
34	Scallop Dredge	OPEN	GEN	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	**18**	18
35	Scallop Dredge	OPEN	GEN	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	**16**	16
36	Scallop Dredge	OPEN	LIM	MA	all	0	0	0	0	0	0	134	0	0	**214**	0	0	0	0	132	109	214
37	Scallop Dredge	OPEN	LIM	NE	all	0	0	0	0	222	0	221	158	0	160	**789**	723	0	0	200	112	789
38+	Danish Seine	OPEN	all	MA	all	18	18	18	18	18	18	18	18	18	18	18	18	18	18	**18**	18	18
39	Mid-water Paired & Single Trawl	OPEN	all	MA	all	16	16	16	16	16	16	16	16	16	16	16	16	16	16	**16**	16	16
40	Mid-water Paired & Single Trawl	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	**39**	39
41	Pots and Traps, Fish	OPEN	all	MA	all	26	26	26	26	26	26	26	26	26	26	26	26	26	26	**26**	13	26
42	Pots and Traps, Fish	OPEN	all	NE	all	23	23	23	23	23	23	23	23	23	23	23	23	23	23	**23**	12	23
43	Pots and Traps, Conch	OPEN	all	MA	all	24	24	24	24	24	24	24	24	24	24	24	24	24	24	**24**	12	24
44	Pots and Traps, Conch	OPEN	all	NE	all	29	29	29	29	29	29	29	29	29	29	29	29	29	29	**29**	12	29
45	Pots and Traps, Hagfish	OPEN	all	MA	all	6	6	6	6	6	6	6	6	6	6	6	6	6	6	**6**	6	6
46	Pots and Traps, Hagfish	OPEN	all	NE	all	68	68	68	68	68	68	68	68	68	68	68	68	68	68	**68**	68	68
47	Pots and Traps, Shrimp	OPEN	all	NE	all	6	6	6	6	6	6	6	6	6	6	6	6	6	6	**6**	6	6
48	Pots and Traps, Lobster	OPEN	all	MA	all	65	65	65	65	65	65	65	65	65	65	65	65	65	65	**65**	16	65
49	Pots and Traps, Lobster	OPEN	all	NE	all	445	445	445	445	445	445	445	445	445	445	445	445	445	445	**445**	16	445
50	Pots and Traps, Crab	OPEN	all	MA	all	12	12	12	12	12	12	12	12	12	12	12	12	12	12	**12**	12	12
51	Pots and Traps, Crab	OPEN	all	NE	all	76	76	76	76	76	76	76	76	76	76	76	76	76	76	**76**	76	76
52	Beam Trawl	OPEN	all	MA	all	25	25	25	25	25	25	25	25	25	25	25	25	25	25	**25**	25	25
53	Beam Trawl	OPEN	all	NE	all	14	14	14	14	14	14	14	14	14	14	14	14	14	14	**14**	14	14
54	Dredge, Other	OPEN	all	MA	all	11	11	11	11	11	11	11	11	11	11	11	11	11	11	**11**	11	11
55	Ocean Quahog/Surfclam Dredge	OPEN	all	MA	all	88	88	88	88	88	88	88	88	88	88	88	88	88	88	**88**	23	88
56	Ocean Quahog/Surfclam Dredge	OPEN	all	NE	all	48	48	48	48	48	48	48	48	48	48	48	48	48	48	**48**	13	48
					Total	**1,643**	**1,643**	**1,643**	**8,341**	**2,257**	**2,334**	**3,067**	**3,019**	**2,801**	**3,347**	**4,060**	**4,067**	**1,643**	**1,643**	**4,100**	**1,770**	**11,499**

Table 3. The number of sea days needed to monitor fish/invertebrates (FISH), loggerhead turtles (TURS), combined species groups (COMBINED), and the proposed observer sea days allocated by fleet for April 2013 through March 2014. Note: * indicates all coverage is dependent on industry activity; ** indicates some coverage is dependent on industry activity; *** indicates coverage for protected species bycatch (not applicable to non-ESA listed fish and invertebrates); + indicates new fleets in 2013.

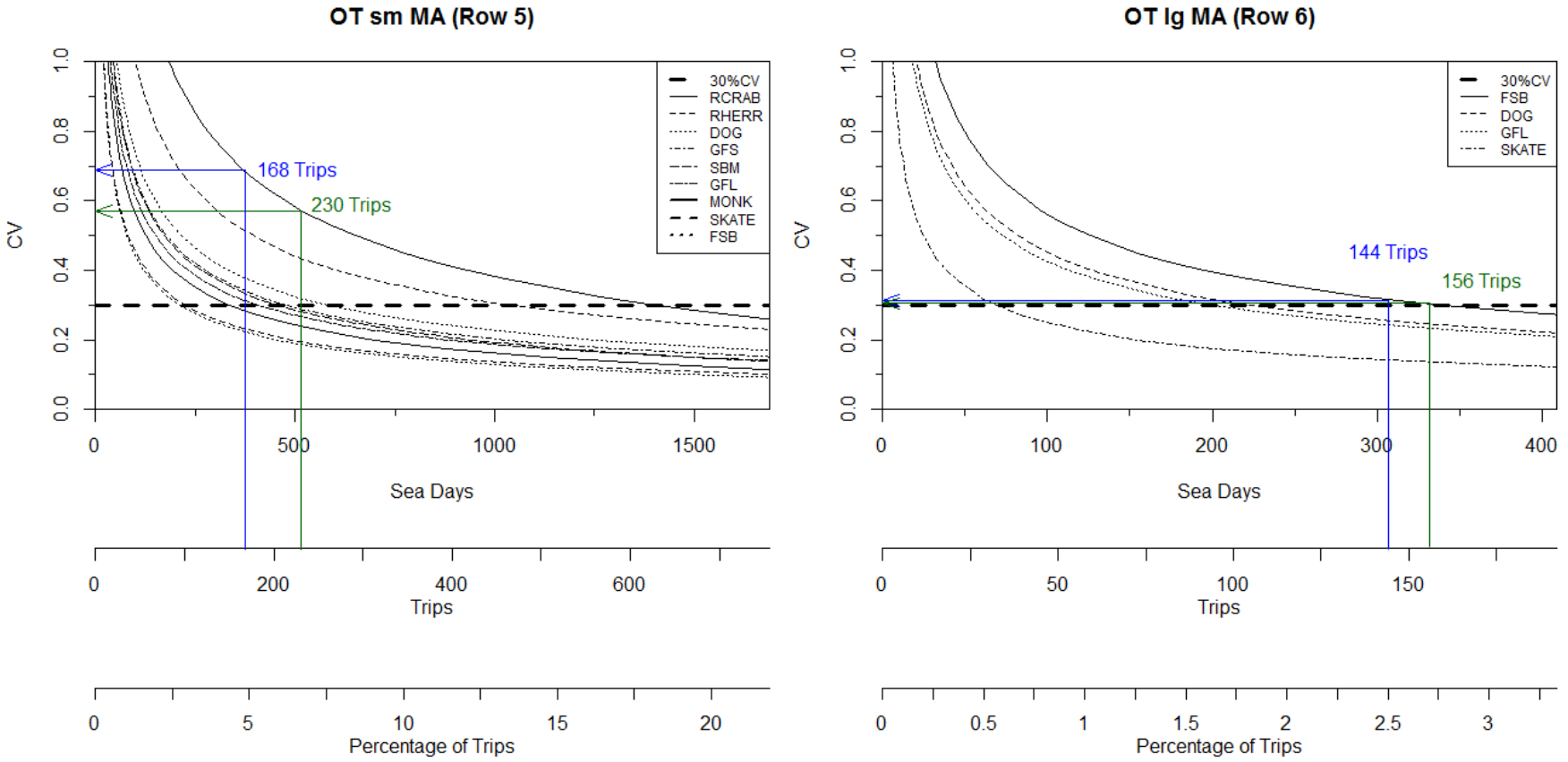
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2013 Sea Days Needed for FISH	2012, 2013 Sea Days Needed for TURS	2013 Sea Days Needed COMBINED	Sea Days Allocated for April 2013 - March 2014	Comments
1	Longline	OPEN	all	MA	all	60		60	0	
2	Longline	OPEN	all	NE	all	126		126	263	Fish stock assessment support *
3	Hand Line	OPEN	all	MA	all	84		84	8	Fish stock assessment support *
4	Hand Line	OPEN	all	NE	all	14		14	162	Fish stock assessment support *
5	Otter Trawl	OPEN	all	MA	sm	1,408	4,838	3,633	722	Fish stock assessment and turtle bycatch support **
6	Otter Trawl	OPEN	all	MA	lg	341		880	474	Fish stock assessment and turlte bycatch support **
7	Otter Trawl	OPEN	all	NE	sm	530		530	714	Fish stock assessment support **
8	Otter Trawl	OPEN	all	NE	lg	5,290		5,290	3,703	Fish stock assessment support **
9	Scallop Trawl	AA	GEN	MA	all	16		41		Industry funded* (see Row 32)
10	Scallop Trawl	AA	LIM	MA	all	12		31		Industry funded * (see Row 32)
11	Scallop Trawl	OPEN	GEN	MA	all	25		65	2	Industry funded * (see Row 36); 2 agency days for April
12	Scallop Trawl	OPEN	LIM	MA	all	73		188		Industry funded * (see Row 36)
13	Otter Trawl, Ruhle	OPEN	all	MA	lg	30		30	6	Fish stock assessment support *
14	Otter Trawl, Ruhle	OPEN	all	NE	sm	74		74	10	Fish stock assessment support *
15	Otter Trawl, Ruhle	OPEN	all	NE	lg	94		94	42	Fish stock assessment support *
16	Otter Trawl, Haddock Separator	OPEN	all	MA	lg	3		3	3	Fish stock assessment support *
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	106		106	226	Fish stock assessment support *
18	Shrimp Trawl	OPEN	all	MA	all	70		70	0	
19	Shrimp Trawl	OPEN	all	NE	all	18		18	18	Fish stock assessment support
20	Floating Trap	OPEN	all	MA	all	9		9	0	
21	Floating Trap	OPEN	all	NE	all	9		9	0	
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	42	2,593	676	0	(286 days for protected species bycatch only) ***
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	36		580	0	(218 days for protected species bycatch only) ***
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	83		1,337	0	(214 days for protected species bycatch only) ***
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	11		11	0	(4 days for protected species bycatch only) ***
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	69		69	1,611	Fish stock assessment support ** (274 days for protected species bycatch only) ***
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	165		165	1,072	Fish stock assessment support ** (140 days for protected species bycatch only) ***
28	Purse Seine	OPEN	all	MA	all	11		11	79	Fish stock assessment support
29	Purse Seine	OPEN	all	NE	all	20		20	118	Fish stock assessment support
30	Scallop Dredge	AA	GEN	MA	all	22		69		Industry funded * (see Row 32)
31	Scallop Dredge	AA	GEN	NE	all	23		23		Industry funded * (see Row 33)
32	Scallop Dredge	AA	LIM	MA	all	157	1,293	494	**183**	Industry funded * (Rows 9, 10, 30, & 32)
33	Scallop Dredge	AA	LIM	NE	all	392		392	**350**	Industry funded * (Rows 31 & 33)
34	Scallop Dredge	OPEN	GEN	MA	all	18		57	2	Industry funded * (see Row 36); 2 agency days for April
35	Scallop Dredge	OPEN	GEN	NE	all	16		16	2	Industry funded * (see Row 36); 2 agency days for April
36	Scallop Dredge	OPEN	LIM	MA	all	214		673	**1,869**	Industry funded * (Rows 11, 12, 34, 35, 36, & 37)
37	Scallop Dredge	OPEN	LIM	NE	all	789		789		Industry funded * (see Rows 36)
38+	Danish Seine	OPEN	all	MA	all	18		18	0	
39	Mid-water Paired & Single Trawl	OPEN	all	MA	all	16		16	16	Fish stock assessment support
40	Mid-water Paired & Single Trawl	OPEN	all	NE	all	39		39	287	Fish stock assessment support
41	Pots and Traps, Fish	OPEN	all	MA	all	26		26	0	
42	Pots and Traps, Fish	OPEN	all	NE	all	23		23	0	
43	Pots and Traps, Conch	OPEN	all	MA	all	24		24	0	
44	Pots and Traps, Conch	OPEN	all	NE	all	29		29	0	
45	Pots and Traps, Hagfish	OPEN	all	MA	all	6		6	0	
46	Pots and Traps, Hagfish	OPEN	all	NE	all	68		68	0	
47	Pots and Traps, Shrimp	OPEN	all	NE	all	6		6	0	
48	Pots and Traps, Lobster	OPEN	all	MA	all	65		65	120	Fish stock assessment support
49	Pots and Traps, Lobster	OPEN	all	NE	all	445		445	0	
50	Pots and Traps, Crab	OPEN	all	MA	all	12		12	0	
51	Pots and Traps, Crab	OPEN	all	NE	all	76		76	0	
52	Beam Trawl	OPEN	all	MA	all	25		25	0	
53	Beam Trawl	OPEN	all	NE	all	14		14	0	
54	Dredge, Other	OPEN	all	MA	all	11		11	0	
55	Ocean Quahog/Surfclam Dredge	OPEN	all	MA	all	88		88	0	
56	Ocean Quahog/Surfclam Dredge	OPEN	all	NE	all	48		48	0	
	Herring CAI coverage								505	Coverage associated with Rows 28, 29, 39, and 40
	Protected species coverage***								1,136	Coverage associated with Rows 22 through 27
	Discovery Days								20	
	Training Days								100	
					Total	**11,499**	**8,724**	**17,776**	**13,823**	
	Sub-total for Agency-funded fleets							14,938	11,421	
	Sub-total for Industry-funded fleets							2,838	2,402	

Appendix Table 1. Stratification abbreviations used for 2013 fleets (Tables 2 and 3).

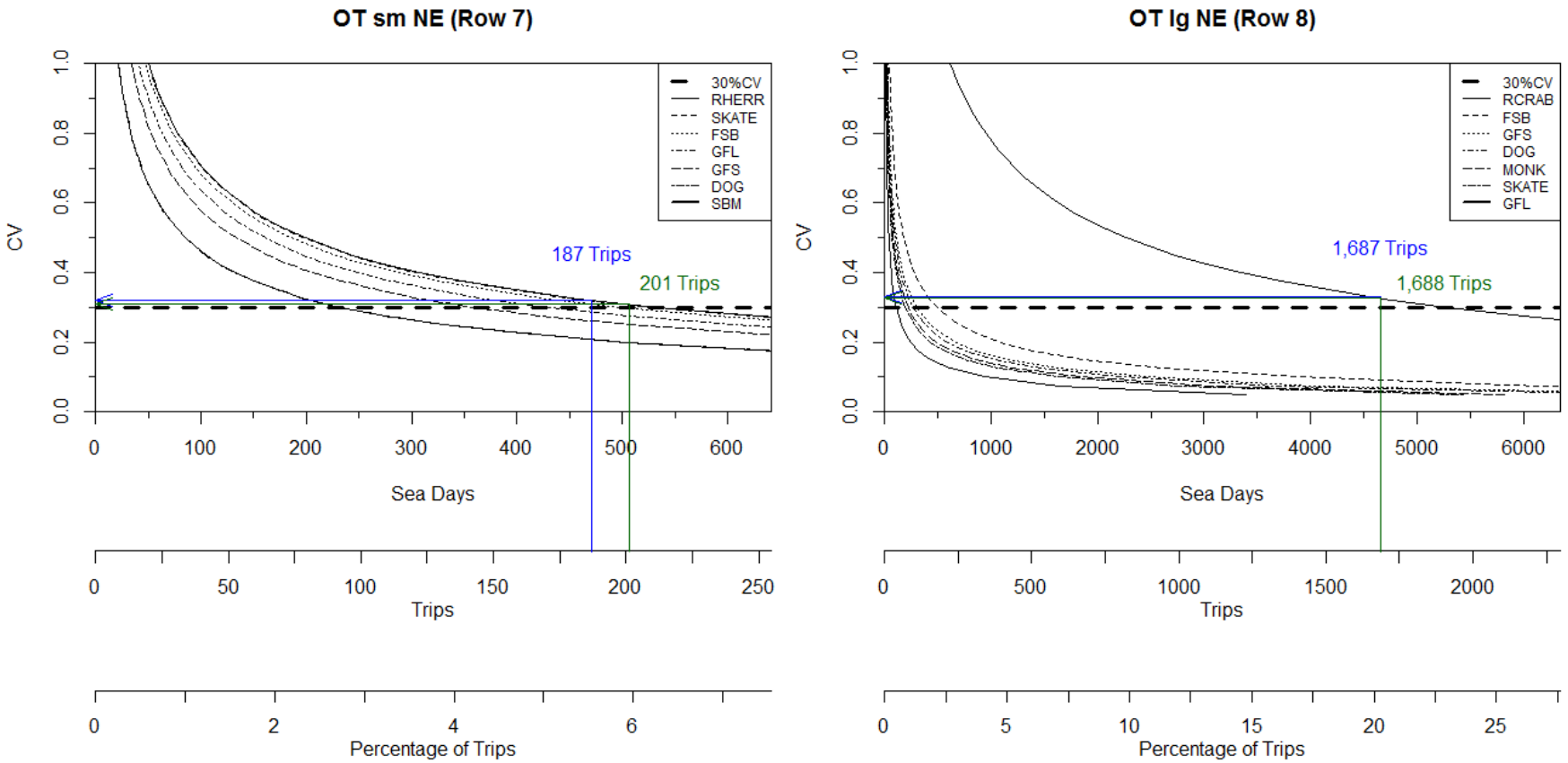
Abbreviation	Definition
MA	Mid-Atlantic ports (CT and southward)
NE	New England ports (RI and northward)
sm	Small mesh (less than 5.5 inches)
lg	Large mesh (5.5 to 7.99 inches)
xlg	Extra-large mesh (8 inches and greater)
LIM	Limited access category
GEN	General category
OPEN	Non-access area
AA	Access area

Appendix Table 2. The number of Northeast Fisheries Observer Program (NEFOP) observed trips, summarized by two funding groups (Atlantic States Marine Fisheries Commission [ASMFC] funded and non-ASMFC funded) and the total observed trips used in the sample size analyses conducted by Wigley et al. (in press). The difference in expected coefficient of variation (CV) of the discard estimate of nine species groups in four fleets were obtained by subtracting the expected CV based on the non-ASMFC funded trips from the CV of the discard estimate based on the total observed trips in each fleet. The four species groups for which the increased number of trips lowered the CV (increased the precision) below 30% are indicated in bold blue font. Species abbreviations are given in Table 1.

	NEFOP Observed Trips			Difference in Expected CV								
Fleet	ASMFC-funded Trips	non-ASMFC-funded Trips	Total Trips	RCRAB	RHERR	DOG	GFS	SBM	GFL	MONK	SKATE	FSB
Mid-Atlantic small mesh otter trawl OT sm MA (Row 5)	62	168	230	11%	8%	6%	**5%**	**6%**	**5%**	5%	4%	4%
Mid-Atlantic large mesh otter trawl OT lg MA (Row 6)	12	144	156			1%			1%		1%	1%
New England small mesh otter trawl OT sm NE (Row 7)	14	187	201	1%	1%	1%	1%	1%	1%		2%	**1%**
New England large mesh otter trawl OT lg NE (Row 8)	1	1,687	1,688	< 1%		< 1%	< 1%		< 1%	< 1%	< 1%	< 1%



Appendix Figure 1. Results from the 2013 sample size analysis conducted by Wigley et al. (in press). The curves represent the relationship between the coefficient of variation (CV) and the sample size (in terms of sea days, trips, and percentage of trips) for each of the species groups that were not filtered out by the importance filter. To illustrate the difference in expected CV for one species group, two sample sizes and their associated CV are indicated by the colored arrows. *This figure is a modified version of Figure 3 in Wigley et al. (in press).*



Appendix Figure 1 continued. Results from the 2013 sample size analysis conducted by Wigley et al. (in press). The curves represent the relationship between the coefficient of variation (CV) and the sample size (in terms of sea days, trips, and percentage of trips) for each of the species groups that were not filtered out by the importance filter. To illustrate the difference in expected CV for one species group, two sample sizes and their associated CV are indicated by the colored arrows. *This figure is a modified version of Figure 3 in Wigley et al. (in press).*