

**Proposed 2014 Observer Sea Day Allocation**

**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 waters off the northeastern US. 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 2014 through March 2015 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/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 by using data collected during July 2012 through June 2013 and employing the estimation methods described in Wigley et al. (in press). Fleet abbreviations used in this report are described in Appendix Table 1. Based on the 2014 sample size analysis in Wigley et al. (in press), a total of 14,529 sea days is needed for the 14 fish and invertebrate species groups (Table 2). However, these results required further refinements.

The use of pilot coverage in the sample size analysis may result in too much coverage in cases where little or no observer coverage may actually be needed, when effort changed sharply between years, or when the fleet effort comprises only a few trips. For example, there are ten fleets for which there were fewer than 3 Vessel Trip Report (VTR) trips per quarter for at least one quarter (Rows 9, 10, 13-16, 25, 42, 44, and 56; Appendix Table 2). To allocate sea days based on pilot coverage to these fleets for these quarters would result in coverage rates exceeding 100%. Additionally, there are several fleets for which activity is greater than 3 VTR trips per quarter, but overall trip activity is low (e.g., Rows 39, 45, and 46; Appendix Table 2). To allocate sea days based on pilot coverage to these fleets would result in coverage rates that exceed those derived from observer data. For fleets with low trip activity, there are two scenarios: (1) fleets for which significant activity occurs in other quarters (e.g., Rows 42 and 44; Appendix Table 2); and (2) fleets for which overall activity is low (e.g., Rows 9, 10, 13-16, 25, 39, 45, 46, and 56; Appendix Table 2). In the first scenario, the use of pilot coverage is warranted for these fleets. In the second scenario, pilot coverage is not warranted.

A refinement to the sample size analysis was developed to address the potential for excessive observer coverage created by using a pilot coverage policy for fleets with overall low activity. Pilot coverage had been designed to provide minimum number of trips sufficient to compute the variance of discard estimates and subsequently the derivation of sea days needed. The number of

sea days per quarter could not be reduced further without omitting the fleet from the sample size analysis. A standardized approach, similar to the two filters used in the importance filter (Wigley et al. 2007), was employed to remove fleets with overall low trip activity. This approach hereafter is referred to as the trip filter. In the trip filter, the percentage of VTR trips for a fleet was derived by dividing the number of VTR trips in a fleet by the total number of VTR trips across all fleets. The fleets were then ranked (smallest to largest) by the percentage of trips in a fleet and the cumulative percentage for each fleet was then derived. A cut point of 1% was selected to remove fleets that contained the lowest cumulative 1% of the total trips. Thus the trip filter excludes those fleets, which in aggregate, constitute less than 1% of all commercial fishing activity. Fleets which constitute the upper cumulative 99% of all trips remain in the analysis. When the trip filter was applied, 22 of the 56 fleets were removed (Rows 9, 10, 12-17, 20, 21, 25, 30, 31, 38, 39, 45, 46, 49-52, and 56; Appendix Table 2; Table 3, Step 2). For the remaining 34 fleets, a total of 13,690 sea days is needed for the 14 fish/invertebrate species groups (Table 3; Step 2). Implications of the trip filter are discussed later.

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 2013). 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, 2013 and sea day estimation methods in Murray 2012), 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<sup>1</sup> turtle gear types and fish/invertebrate fleets are given below and in Table 3, Steps 2 and 3.

<b>Turtle Gear Types and Fish Fleets</b>	<b>Sea Days</b>	
	<b>Loggerhead Turtles</b>	<b>Fish/Invertebrates Species Groups</b>
MA Otter Trawl and Scallop Trawl Rows 5, 6, 9, 10, 11, and 12	4,838	2,320
MA Gillnet Rows 22, 23, and 24	2,593	101
MA Scallop Dredge Rows 30, 32, 34, and 36	1,293	261

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 (Table 3; Step 4a and 4b).

A total of 19,732 sea days is needed for fish/invertebrates and loggerhead turtles (COMBINED; Table 3; Step 5) during the April 2014 through March 2015 period. Of the 19,732 sea days, 17,299 sea days are needed for agency-funded fleets and 2,433 sea days are needed for industry-funded fleets (Table 3, Step 6).

### ***Funding available for the April 2014 through March 2015 period***

The funds available to the NEFSC’s Northeast Fisheries Observer Program (NEFOP) in fiscal year 2014 are estimated to provide support for 13,799 days<sup>2</sup>. Based upon an observer set-aside

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<sup>1</sup> In the sea turtle sample size analysis, Mid-Atlantic refers to areas fished west of 70°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.

<sup>2</sup> In addition to the 13,799 agency-funded sea days described in this report, there are also 300 days associated with the National Observer Program that are available in the 2014 budget to fund At-Sea Monitoring in April 2015. Since April 2015 is beyond the time period summarized in this report, the 300 days are not included in this report.

compensation rate analysis, there is industry funding for 2,703 days. Hence, 16,502 days (13,799 + 2,703) are available for observer coverage during April 2014 through March 2015.

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: Atlantic Coast, National Catch Share Program, National Observer Program, Northeast Observer Program, Marine Mammal Protection Act, and Reducing Bycatch.

- **Agency-funded:** The funding sources for the 13,799 agency-funded sea days include: Atlantic Coast (1,164 days) and Northeast Observer Program (4,837 sea days) that collectively fund the sea days for prioritization (6,001 days; Table 3, Step 7); National Catch Share Program (475 days) and National Observer Program (6,111 days) that collectively fund At-Sea Monitoring (ASM; 6,586 days; Table 3, Step 7); Northeast Observer Program (579 days) and Reducing Bycatch (67 days) that collectively fund the sea days to support herring management (646 days; Table 3, Step 7); and Marine Mammal Protection Act (MMPA; 566 days; Table 3, Step 7) that fund the sea days to monitor protected species.

- 566 agency-funded days are applicable to protected species<sup>3</sup> only.

The 566 MMPA 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. Owing to the extra demands of monitoring protected species, information on finfish and shellfish is not collected on these trips. However, these days will provide observer coverage for sea turtles and ESA-listed fish species above that which is allocated.

- 13,233 agency-funded days (13,799 - 566) are applicable for all species.
  - 6,001 days are subject to the prioritization process across all fleets. The prioritization approach is described in the next section and given in Table 4.
  - 6,586 days are associated with At-Sea Monitoring and have been provisionally allocated among fleets associated with New England groundfish based on last year industry activity. Actual allocation will be based on industry activity during April 2014 through March 2015.
  - 646 days are associated with herring management. To support the management expectation of 100% coverage of herring trips in the access areas, 500 of the 646 sea days were re-directed from the pool of sea days subject to the prioritization process across all fleets. The 500 days are based on the anticipated number of access area herring trips and are similar in magnitude to the numbers of days redirected in recent past years to meet the management

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<sup>3</sup> In this document, protected species refers to marine mammals, sea turtles, and ESA-listed fish.

expectation. Under SBRM, the re-direction of sea days from the prioritized days will not be possible.

- No sea days have been set aside to support the training of new observers or as discovery days to address emerging questions of scientific and management interest as the year progresses.
- Projected costs (i.e., an estimated rate that includes fixed and variable costs for operations, training, and data processing infrastructure and at-sea costs): \$1200/day for NEFOP and ASM days.
- **Industry-funded:** The number of industry-funded sea days available for scallop fleets 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). The sale of the additional scallops allocated to each boat supplies the funding for the at-sea costs of observer coverage. 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 13 industry-funded scallop fleets (Rows 9-13 and 30-37; Table 3).
  - Based upon the compensation rate analysis, a total of 2,703 sea days can be funded: 2,093 days for Open areas, 215 days for Delmarva Access Area (DMV), 136 days for Closed Area II (CAII), and 80 days in the Nantucket Lightship Access Area (NLAA).
    - 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 2014 set-aside compensation rate calculations and scallop management measures are available at:  
<http://www.nero.noaa.gov/nr/2014/February/14scalobsercompratephl.pdf>  
<http://www.nero.noaa.gov/mediacenter/2014/scallop2014measures.pdf>
  - Of the 2,093 days for the Open areas, there are 248 days for Limited Access General Category fleets (Rows 11, 34, and 35; Table 5) and 1,845 days for Limited Access fleets (Rows 12, 36, and 37; Table 5).
  - Coverage of the 13 fleets depends on industry activity among these fleets during April 2014 through March 2015; the sea days represent the maximum coverage (i.e., caps).
  - Projected costs: the cost to industry for at-sea portion is \$675/day for industry-funded fleets. Additional agency funds are needed for training and certification of observers and data processing.

Below is a summary of sea days based on the agency budget and the compensate rate analysis, by funding source for April 2014 through March 2015.

<b>Funding Source</b>	<b>Sea Days</b>
Agency-funded Total	<b>13,799</b>
Agency-funded applicable to all species	13,233
Agency-funded applicable to protected species only	566
Industry-funded Total applicable to all species	<b>2,703</b>
<b>Total</b>	<b>16,502</b>

***Prioritization Trigger and Allocation of Sea Days by Fleet***

Within the agency-funded fleets and prioritization-applicable funding, a funding shortfall of 11,298 days (17,299 – 6,001 days; Table 3) is expected.

At the April 2014 meetings, the New England and Mid-Atlantic Fishery Management Councils passed a motion to adopt the SBRM Omnibus Amendment. The amendment had been revised to address the deficiencies found by the Court in the prioritization process. The SBRM Omnibus Amendment now includes descriptions of the SBRM funding trigger and the prioritization approach. The 2014 funding shortfall would have triggered the SBRM prioritization approach; the prioritization approach is utilized with a portion of the agency funds.

The following describes the steps taken to allocate the 16,502 funded sea days to fleets (Tables 3, 4 and 5).

- Step 1. Derive the number of sea days needed for the 14 fish and invertebrate species groups (see Wigley et al. in press, same method as Wigley et al. 2013; Table 3).
- Step 2. Apply the trip filter and remove sea days from fleets that comprise 1% or less of the cumulative percentage of trips across all fleets. A total of 13,690 sea days is needed across 34 fleets; Table 3).
- Step 3. Derive the number of sea days needed for sea turtles (see Murray 2012, 2013; Table 3).
- Step 4. To support the penultimate prioritization approach, derive the number of sea days needed for loggerhead turtles for each of the fish fleets associated with the turtle gear type group (Table 3).
  - a. Derive the percentage of days for each fish fleet within a turtle gear type group. For each fleet associated with a turtle gear type, divide the sea days needed for fish by the sum of the sea days needed for the gear type group.

- b. Derive the number of sea days needed for loggerhead turtles by fish fleet. Multiply the number of turtle sea days needed for the gear type by the percentage of days needed for each fish fleet.

Step 5. Derive the number of sea days needed for fish and turtles COMBINED; select the largest of the two sea days (i.e., sea days needed for the 14 fish species groups with the trip filter applied [Step 2] and sea days needed for loggerhead turtles [Step 4b]) within the fleet.

A total of 19,732 days are needed to achieve a 30% CV on the discards of the 15 species groups in 2014; Table 3).

Step 6. Partition fleets into funding source categories and sum the number of sea days needed, by funding source.

There were 17,299 days and 2,433 days needed to achieve a 30% CV for the 15 species groups for agency-funded and industry-funded fleets, respectively (Table 3).

Step 7. Obtain funded sea days, by funding source category. For agency-funded sea days, calculate the number of sea days applicable to the prioritization process (prioritized versus non-prioritized days).

There are 6,001 agency-funded days applicable to the prioritization process (Table 3).

Step 8. Evaluate needed sea days versus funded sea days for each funding category and calculate shortfall or surplus sea days associated with the prioritization process.

A shortfall of 11,298 days is expected for agency-funded fleets (Table 3).

Step 9. Apply the penultimate approach algorithm to allocate sea days to fleets for agency-funded days that are applicable to prioritization process.

As described in the draft SBRM Amendment<sup>4</sup>, the number of agency-funded sea days applicable to the prioritization process is assigned to each fleet (fishing mode) after sequentially removing the sea days needed for the species group/fleet with the highest sea day difference between adjacent species groups within a fleet until the sea day shortfall is removed.

The following describes the steps taken to assign the agency-funded sea days applicable to the prioritization process using the penultimate approach (Table 4).

Step 9.1. For each agency-funded fleet, list the sea days needed for the 15 species groups (fish/invertebrates Table 2; loggerhead turtle Table 3) in descending order within a fleet. Use the minimum pilot days (Table 2) as the minimum sea days needed for the fleet for fleets that are not filtered out via the trip filter.

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<sup>4</sup> Information relating to the draft SBRM Omnibus Amendment is available at: <http://www.nero.noaa.gov/mediacenter/2013/09/draftsbrmamendment.html> .



Step 9.2. Calculate the differences in sea days between adjacent species groups within each agency-funded fleet.

Step 9.3. Within the resulting matrix of differences (Step 9.2), identify the largest difference and remove the sea days associated with the species group accounting for this difference.

Repeat this process for the next largest difference, with the constraint that the differences are taken in penultimate order (from left to right in the matrix) within a fleet, until the cumulative reduction of sea days equals the sea day shortfall (Step 8). If the reduction in sea days using the next largest (penultimate) value is greater than the shortfall, reduce the number of sea days only enough to remove the shortfall.

The 2014 sea day shortfall is 11,298 days. The 7,262 sea days (RCRAB in Row 8) associated with the largest sea day difference (6,100 days) between adjacent species groups is removed first (Table 4). The penultimate value in Row 8 is associated with GFS (1,162 days). Given the penultimate fleet constraint (i.e., cannot remove the sea days of a species group unless all species groups with greater numbers of sea days have been removed within the fleet), the 2,688 sea days (TURS in Row 5) associated with the next largest sea day difference (1,399) between adjacent species groups is removed next. The penultimate value in Row 5 is associated with FSB (1,289 days). The 1,258 sea days (TURS in Row 23) associated with the next largest sea day difference (1,209) is removed next. The penultimate value in Row 23 is associated with PILOT (38 days). The 2,100 days (TURS in Row 6) with the next largest sea day difference (1,093) is removed next. The penultimate value in Row 6 is associated with MONK (1,007 days). The 976 days (TURS in Row 22) with the next largest sea day difference (938) is removed next. The penultimate value in Row 22 is associated with PILOT (49 days). The 679 sea day difference associated with the last species group (328 days for DOG in Row 6) would have removed more sea days than needed to reach the shortfall amount of 11,298 day (Table 4). Thus, only 559 of the 679 sea day difference between adjacent species groups (1,007 days for MONK and 328 days for DOG) is used (Table 4). The prioritized sea days for Row 6 (448 days) represent the difference between 1,007 days and 559 days.

Step 9.4. After the removal of sea days within a fleet (Step 9.3), the remaining highest sea days (i.e., the penultimate or the left-hand-most value in Step 9.1) becomes the “PRIORITIZED” sea days required for that fleet.

The 6,001 prioritized sea days provide observer coverage to all 34 fleets. There are 29 fleets for which no reduction in sea days occurred and there are five fleets (Rows 5, 6, 8, 22, and 23) for which the numbers of sea days allocated are less than the days needed to achieve a 30% CV. In these five fleets, there are three species groups (RCRAB, TURS, and MONK) in six species group/fleet combinations for which the

expected CV will exceed 30%. All other species groups within these fleets have an expected CV of 30% or less.

Step 9.5. Identify fleets that cannot be covered by NEFOP this year.

By using the prioritization process, more fleets have allocated observer coverage than in past years. There are practical limitations of the NEFOP to expand observer coverage to all fleets that have not had observer coverage before or in recent years. While the NEFOP can accommodate most of the fleets previously not assigned coverage, the NEFOP will not have trained certified observers available for ocean quahog and surfclam dredge fleets this year (Rows 54 and 55; Table 4). The NEFOP expects to be able to cover these fleets next year. Thus, the 139 prioritized days associated with Rows 54 and 55 (76 days and 63 days, respectively) have been re-allocated to Row 6, the last fleet impacted by the prioritization process. Row 6 has 587 prioritized sea days (448 days + 139 days) and Rows 54 and 55 have zero days.

Step 10. Allocate agency-funded non-prioritized sea days: ASM, herring management, and MMPA days.

There are 7,798 agency-funded days that are not applicable to the prioritization process (non-prioritized days: 6,586 ASM days, 566 MMPA days, and 646 herring management days; Table 3).

The 6,586 ASM sea days will be assigned to trips via the Pre-Trip Notification System (PTNS). This means that the observer coverage within each of these fleets will depend upon industry activity during the April 2014 through March 2015 period. The ASM sea days have been proportionally allocated based on the previous year's industry activity, and thus the allocation presented in this report should be considered provisional (Table 5).

The 566 MMPA sea days, all assumed to have limited sampling protocols, are allocated to a row designated as "MMPA coverage" and will be associated with the NE and MA gillnet fleets (Rows 22-27; Table 5).

The 646 herring management days are allocated to a row designated as "herring management coverage" and will be associated with the NE midwater trawl fleet (Row 40; Table 5).

Step 11. Allocate industry-funded days. The sea days for the industry-funded fleets are assigned to trips via the call-in system<sup>5</sup>. Similar to the ASM non-prioritized sea days, the sea day coverage for industry-funded fleets will depend on industry activity during the April 2014 through March 2015 period and will be capped as described above. The 2,703 industry-funded sea days have not been allocated to individual fish fleets, but rather to groups of fish

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<sup>5</sup> For more information on the call-in system for the industry-funded scallop program, see <http://www.nero.noaa.gov/mediacenter/2014/scallop2014measures.pdf>

fleets that correspond to the stratification used in compensation rate analysis: Mid-Atlantic access area fleets (Rows 9, 10, 30, and 32; Table 5); Open areas fleets (Rows 12, 36, and 37; Table 5); and New England access area fleets (Rows 31 and 33; Table 5). The allocated sea days represent the maximum coverage (i.e., caps).

Step 12. The sea days allocated for the April 2014 – March 2015 (TOTAL) is the sum of the prioritized days (Step 9.5), non-prioritized days (Step 10), and industry-funded days (Step 11). A total of 16,502 days is allocated across 40 fleets (Table 5).

The agency-funded fleets with an \* or \*\* (Table 5) indicate that some or all of the observer coverage will be assigned via the Pre-Trip Notification System (PTNS; see Palmer et al. 2013) or the scallop call-in program. This means that some or all of the observer coverage within each of these fleets will depend upon industry activity during the April 2014 through March 2015 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. All other fleets will have sea days assigned to trips via the NEFOP sea day schedule.

The Joint Working Group on Observer Sea Day Prioritization<sup>6</sup> met via conference call on May 15, 2014 and agreed to continue to use the PTNS to select directed longfin squid trips for observer coverage during the April 2014 through March 2015 period despite selection issues between the PTNS and the NEFOP sea day schedule. The number of sea days allocated to the directed longfin squid fishery were derived by using the proportion of directed longfin squid trips to total trips within each in the Mid-Atlantic and New England small mesh otter trawl fleets (Rows 5 and 7); 161 sea days (12.5% of 1,289 sea days in Row 5, Table 5) and 147 sea days (9.5% of the 1,548 days in Row 7, Table 5) will be assigned to trips via the PTNS for monitor butterfish on directed longfin squid fishery in the Mid-Atlantic and small mesh otter trawl fleets, respectively. The NEFOP staff and others will work toward reducing or eliminating the issues resulting from two concurrent selection systems. Sub-setting the observer coverage associated with the Mid-Atlantic and New England small mesh otter trawl fleets (Rows 5 and 7) for directed longfin squid trips is not expected to continue.

Although the trip filter removes the fleets with overall low activity from the sample size analysis, some of these fleets may have observer coverage assigned via the PTNS or the call-in program. For example, 6 of the 22 fleets that are removed by the trip filter are scallop fleets (Rows 9, 10, 12, 13, 30, and 31) that have a call-in program such that coverage could be assigned based on industry activity. Similarly, those fleets associated with the groundfish (e.g., Rows 16 and 17) could be assigned observer coverage via the Pre-Trip Notification System (PTNS), depending upon industry activity. Because the sea days needed for these fleets have been excluded, the needed sea days may be slightly underestimated. However, it is important to note that these fleets have very low trip activity and the activity is expected to remain low. As a practical matter, fleets with low trip activity within a quarter or overall are very difficult to “find” unless they are part of PTNS or a call-

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<sup>6</sup> The Joint Working Group on Observer Sea Day Prioritization is a newly formed working group consisting of staff from the Northeast Fisheries Science Center and Greater Atlantic Regional Fisheries Office.

in program. Attempts to assign observers can be inefficient since the probability of randomly finding such trips at a specific port or time period will be very low. Such fleets fall below practical detection limits.

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 and Figure 3 in 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 NEFOP database during the July 2012 through June 2013 time period (Table 2 in Wigley et al. in press). For fish, the following two examples illustrate that although the sea days needed may be greater than the total allocated sea days, this does not imply that the expected precision for *all* fish species groups will exceed 30% CV. In the Mid-Atlantic large mesh otter trawl fleet, a total of 638 days (Table 5, Step 12, Row 6) has been allocated for which 1,007 days (Table 2, Row 6) are needed for a 30% CV for the 14 fish/invertebrate species groups. The expected CV for MONK is approximately 38% and all other fish/invertebrate species groups have an expected CV less than 30% with 638 days allocated to this fleet (Figure 1). In the NE large mesh otter fleet, a total of 4,178 days (Table 5, Step 12, Row 8) has been allocated for which 7,262 days (Table 2, Row 8) are needed for a 30% CV for the 14 fish/invertebrate species groups. The expected CV for RCRAB is approximately 44% and all other fish/invertebrate species groups have an expected CV of 30% or less with 4,178 days allocated to this fleet (Figure 1). For loggerhead turtles, 4,838 days are needed in Mid-Atlantic otter trawl fleets, and 2,593 days in Mid-Atlantic gillnet fleets, for a 30% CV. With 1,927 days allocated to Mid-Atlantic otter trawl fleets (Table 5, Step 12, Rows 5 and 6), the expected CV increases to roughly 48%. With 446 days allocated to Mid-Atlantic gillnet fleets (Table 5, Rows 22-24), the expected CV increases to roughly 70% (Figure 2). As MMPA days will provide additional coverage for turtles, the expected CVs may be slightly lower.

The NY Department of Environmental Conservation has secured funding through the Atlantic Coast Cooperative Statistical Program (ACCSP) to support observer coverage (approximately 880 days) the next several years for otter trawl, gillnet, and pot/trap fleets in the Mid-Atlantic region. These sea days will provide observer coverage for all species above that allocated in this report.

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Table 1. A list of the 14 fish and invertebrate species groups and one species of sea turtles (in bold), with species group abbreviations in parentheses and scientific names in italics, and the species that compose these groups, corresponding to the 13 federal fishery management plans implements in the waters off the northeastern United States.

<b>ATLANTIC SALMON (SAL)</b>	<i>Salmo salar</i>
<b>BLUEFISH (BLUE)</b>	<i>Pomatomus saltatrix</i>
<b>FLUKE - SCUP - BLACK SEA BASS (FSB)</b>	
Black sea bass	<i>Centropristis striata</i>
Fluke	<i>Paralichthys dentatus</i>
Scup	<i>Stenotomus chrysops</i>
<b>HERRING, ATLANTIC (HERR)</b>	<i>Clupea harengus</i>
<b>LARGE MESH GROUND FISH (GFL)</b>	
American plaice	<i>Hippoglossoides platessoides</i>
Atlantic cod	<i>Gadus morhua</i>
Atlantic halibut	<i>Hippoglossus hippoglossus</i>
Atlantic wolffish	<i>Anarhichas lupus</i>
Haddock	<i>Melanogrammus aeglefinus</i>
Ocean pout	<i>Zoarces americanus</i>
Pollock	<i>Pollachius virens</i>
Redfish	<i>Sebastes fasciatus</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>
<b>MONKFISH (MONK)</b>	<i>Lophius americanus</i>
<b>RED CRAB (RCRAB)</b>	<i>Chaceon quinquegens</i>
<b>SEA SCALLOP (SCAL)</b>	<i>Placopecten magellanicus</i>
<b>SKATE COMPLEX (SKATE)<sup>7</sup></b>	<i>Rajidae</i>
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>
<b>SMALL MESH GROUND FISH (GFS)</b>	
Offshore hake	<i>Merluccius albidus</i>
Red hake	<i>Urophycis chuss</i>
Silver hake	<i>Merluccius bilinearis</i>
<b>SPINY DOGFISH (DOG)</b>	<i>Squalus acanthias</i>
<b>SQUID<sup>8</sup> - BUTTERFISH - MACKEREL (SBM)</b>	
Atlantic mackerel	<i>Scomber scombrus</i>
Butterfish	<i>Peprilus triacanthus</i>
Northern shortfin squid	<i>Illex illecebrosus</i>
Longfin inshore squid	<i>Doryteuthis (Amerigo) pealeii</i>
<b>SURFCLAM - OCEAN QUAHOG (SCOQ)</b>	
Surfclam	<i>Spisula solidissima</i>
Ocean quahog	<i>Artica islandica</i>
<b>TILEFISH (TILE)</b>	<i>Lopholatilus chamaeleonticeps</i>
<b>LOGGERHEAD TURTLE (TURS)</b>	<i>Caretta caretta</i>

<sup>7</sup> Skate complex is composed of seven species as well as skate, unknown.

<sup>8</sup> Squid, unclassified is included in this species group. In this document, longfin inshore squid is referred to as longfin squid. Longfin inshore squid and northern shortfin squid are also known as Loligo squid and Illex squid, respectively.



Table 2 continued. The number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for each of the 14 fish and invertebrate species groups, the number of pilot sea days, the number of minimum pilot sea days, and the maximum number of sea days needed for each fleet (2014 Sea Days Needed) for fish and invertebrate species groups based on July 2012 through June 2013 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 6 in Wigley et al. (in press).

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	Pilot Days	Min Pilot Days	2014 Sea Days Needed	Pilot	
43	Pots and Traps, Conch	OPEN	all	MA	all	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	14	30	P
44	Pots and Traps, Conch	OPEN	all	NE	all	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	12	26	P
45	Pots and Traps, Hagfish	OPEN	all	NE	all	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	P
46	Pots and Traps, Shrimp	OPEN	all	NE	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
47	Pots and Traps, Lobster	OPEN	all	MA	all	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	17	51	P
48	Pots and Traps, Lobster	OPEN	all	NE	all	0	0	0	0	0	0	0	165	0	0	0	0	0	0	0	444	17	165	
49	Pots and Traps, Crab	OPEN	all	MA	all	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	P
50	Pots and Traps, Crab	OPEN	all	NE	all	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	P
51	Beam Trawl	OPEN	all	MA	all	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	P
52	Beam Trawl	OPEN	all	NE	all	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	P
53	Dredge, Other	OPEN	all	MA	all	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	P
54	Ocean Quahog/Surfclam Dredge	OPEN	all	MA	all	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	25	76	P
55	Ocean Quahog/Surfclam Dredge	OPEN	all	NE	all	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	14	63	P
56+	Otter Trawl	OPEN	all	NE	smR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	28	28	
<b>Totals</b>						<b>1,323</b>	<b>1,323</b>	<b>1,323</b>	<b>9,732</b>	<b>1,721</b>	<b>2,872</b>	<b>4,065</b>	<b>2,698</b>	<b>4,012</b>	<b>3,011</b>	<b>3,869</b>	<b>3,954</b>	<b>1,323</b>	<b>1,323</b>	<b>4,055</b>	<b>1,913</b>	<b>14,529</b>		



Table 3. The number of sea days needed to monitor fish/invertebrates (FISH), loggerhead turtles (TURS), combined species groups (COMBINED) by fleet (Steps 1 through 5), and the number of funded sea days for April 2014 through March 2015 (Steps 6 through 8). “+” indicates new fleets in 2014.

Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2014 Sea Days Needed FISH	2014 Sea Days Needed FISH FILTERED	2012, 2013, 2014 Sea Days Needed for TURS	% by FISH fleet	TURS Sea Days by FISH fleet	2014 Sea Days Needed COMBINED
1	Longline	OPEN	all	MA	all	85	85				85
2	Longline	OPEN	all	NE	all	12	12				12
3	Hand Line	OPEN	all	MA	all	74	74				74
4	Hand Line	OPEN	all	NE	all	14	14				14
5	Otter Trawl	OPEN	all	MA	sm	1,289	1,289	4,838	0.556	2,688	2,688
6	Otter Trawl	OPEN	all	MA	lg	1,007	1,007		0.434	2,100	2,100
7	Otter Trawl	OPEN	all	NE	sm	1,601	1,601				1,601
8	Otter Trawl	OPEN	all	NE	lg	7,262	7,262				7,262
9	Scallop Trawl	AA	GEN	MA	all	6	0	2,593	0.000	0	0
10	Scallop Trawl	AA	LIM	MA	all	85	0		0.000	0	0
11	Scallop Trawl	OPEN	GEN	MA	all	24	24		0.010	50	50
12	Scallop Trawl	OPEN	LIM	MA	all	58	0		0.000	0	0
13+	Scallop Trawl	OPEN	LIM	NE	all	51	0				0
14	Otter Trawl, Ruhle	OPEN	all	MA	lg	60	0				0
15	Otter Trawl, Ruhle	OPEN	all	NE	sm	26	0				0
16	Otter Trawl, Ruhle	OPEN	all	NE	lg	54	0				0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	111	0				0
18	Shrimp Trawl	OPEN	all	MA	all	57	57				57
19	Shrimp Trawl	OPEN	all	NE	all	21	21				21
20	Floating Trap	OPEN	all	MA	all	9	0				0
21	Floating Trap	OPEN	all	NE	all	6	0				0
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	38	38	2,593	0.376	976	976
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	49	49		0.485	1,258	1,258
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	14	14		0.139	359	359
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	8	0				0
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	94	94				94
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	148	148				148
28	Purse Seine	OPEN	all	MA	all	12	12				12
29	Purse Seine	OPEN	all	NE	all	20	20				20
30	Scallop Dredge	AA	GEN	MA	all	31	0		0.000	0	0
31	Scallop Dredge	AA	GEN	NE	all	30	0				0
32	Scallop Dredge	AA	LIM	MA	all	101	101	1,293	0.387	500	500
33	Scallop Dredge	AA	LIM	NE	all	254	254				254
34	Scallop Dredge	OPEN	GEN	MA	all	42	42		0.161	208	208
35	Scallop Dredge	OPEN	GEN	NE	all	15	15				15
36	Scallop Dredge	OPEN	LIM	MA	all	118	118		0.452	585	585
37	Scallop Dredge	OPEN	LIM	NE	all	821	821				821
38	Danish Seine	OPEN	all	MA	all	9	0				0
39	Mid-water Paired & Single Trawl	OPEN	all	MA	all	43	0				0
40	Mid-water Paired & Single Trawl	OPEN	all	NE	all	45	45				45
41	Pots and Traps, Fish	OPEN	all	MA	all	19	19				19
42	Pots and Traps, Fish	OPEN	all	NE	all	24	24				24
43	Pots and Traps, Conch	OPEN	all	MA	all	30	30				30
44	Pots and Traps, Conch	OPEN	all	NE	all	26	26				26
45	Pots and Traps, Hagfish	OPEN	all	NE	all	73	0				0
46	Pots and Traps, Shrimp	OPEN	all	NE	all	3	0				0
47	Pots and Traps, Lobster	OPEN	all	MA	all	51	51				51
48	Pots and Traps, Lobster	OPEN	all	NE	all	165	165				165
49	Pots and Traps, Crab	OPEN	all	MA	all	15	0				0
50	Pots and Traps, Crab	OPEN	all	NE	all	97	0				0
51	Beam Trawl	OPEN	all	MA	all	25	0				0
52	Beam Trawl	OPEN	all	NE	all	11	0				0
53	Dredge, Other	OPEN	all	MA	all	19	19				19
54	Ocean Quahog/Surflclam Dredge	OPEN	all	MA	all	76	76				76
55	Ocean Quahog/Surflclam Dredge	OPEN	all	NE	all	63	63				63
56+	Otter Trawl	OPEN	all	NE	smR	28	0				0
<b>Total</b>						<b>14,529</b>	<b>13,690</b>	<b>8,724</b>			<b>19,732</b>
<b>Step 6</b>		Agency Fleets (Sea Days Needed)				<b>12,893</b>	<b>12,315</b>			<b>17,299</b>	
		Industry Fleets (Sea Days Needed)				<b>1,636</b>	<b>1,375</b>			<b>2,433</b>	
<b>Step 7</b>		Agency Fleets (Sea Days Funded)						Prioritized		<b>6,001</b>	
		Agency Fleets (Sea Days Funded)						Non-prioritized (ASM)		<b>6,586</b>	
		Agency Fleets (Sea Days Funded)						Non-prioritized (MMPA)		<b>566</b>	
		Industry Fleets (Sea Days Funded)						Non-prioritized (Herring Management)		<b>646</b>	
		Industry Fleets (Sea Days Funded)								<b>2,703</b>	
<b>Step 8</b>		Agency Fleet Difference						SHORTFALL		<b>-11,298</b>	
		Industry Fleet Difference						SURPLUS		<b>270</b>	
		Turtle Gear Types									
		MA Trawl				<b>2,469</b>	<b>2,320</b>	4,838		<b>4,838</b>	
		MA Gillnet				<b>101</b>	<b>101</b>	2,593		<b>2,593</b>	
		MA Dredge				<b>292</b>	<b>261</b>	1,293		<b>1,293</b>	

KEY: AF = Agency funded fleets IF = Industry funded fleets  
Steps independent of prioritization approach



Table 5. The number of sea days needed to monitor the combined species groups (COMBINED; Step 5), prioritized days (Step 9.5), non-prioritized days (Step 10), industry-funded days (Step 11), and the 2014 proposed observer sea days allocated for April 2014 through March 2015, by fleet. 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 2014.

Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2014	Step 9.5	Step 10	Step 11	Step 12	Comments	
						Sea Days Needed COMBINED	2014 Sea Days PRIORITIZED (Penultimate Adjusted)	2014 Sea Days non-prioritized (ASM, MMPA, herring)	2014 Industry-funded Sea Days	Sea Days Allocated for April 2014 - March 2015 (TOTAL)		
1	Longline	OPEN	all	MA	all	85	85	0		85	Fish stock assessment support	
2	Longline	OPEN	all	NE	all	12	12	252		264	Fish stock assessment support *	
3	Hand Line	OPEN	all	MA	all	74	74	6		80	Fish stock assessment support **	
4	Hand Line	OPEN	all	NE	all	14	14	123		137	Fish stock assessment support **	
5	Otter Trawl	OPEN	all	MA	sm	2,688	1,289	0		1,289	Fish stock assessment and turtle bycatch support **	
6	Otter Trawl	OPEN	all	MA	lg	2,100	587	51		638	Fish stock assessment and turtle bycatch support **	
7	Otter Trawl	OPEN	all	NE	sm	1,601	1,601	3		1,604	Fish stock assessment support **	
8	Otter Trawl	OPEN	all	NE	lg	7,262	1,162	3,016		4,178	*Fish stock assessment support **	
9	Scallop Trawl	AA	GEN	MA	all	0					Industry funded* (see Row 32)	
10	Scallop Trawl	AA	LIM	MA	all	0					Industry funded * (see Row 32)	
11	Scallop Trawl	OPEN	GEN	MA	all	50					Industry funded * (see Row 35)	
12	Scallop Trawl	OPEN	LIM	MA	all	0					Industry funded * (see Row 37)	
13+	Scallop Trawl	OPEN	LIM	NE	all	0					Industry funded * (see Row 35)	
14	Otter Trawl, Ruhle	OPEN	all	MA	lg	0	0	0		0		
15	Otter Trawl, Ruhle	OPEN	all	NE	sm	0	0	0		0		
16	Otter Trawl, Ruhle	OPEN	all	NE	lg	0	0	13		13	Fish stock assessment support *	
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	0	0	154		154	Fish stock assessment support *	
18	Shrimp Trawl	OPEN	all	MA	all	57	57	0		57	Fish stock assessment support	
19	Shrimp Trawl	OPEN	all	NE	all	21	21	0		21	Fish stock assessment support	
20	Floating Trap	OPEN	all	MA	all	0	0	0		0		
21	Floating Trap	OPEN	all	NE	all	0	0	0		0		
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	976	38	0		38	Fish stock assessment and turtle bycatch support **	
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	1,258	49	0		49	Fish stock assessment and turtle bycatch support **	
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	359	359	0		359	Fish stock assessment and turtle bycatch support **	
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	0	0	0		0	Fish stock assessment support **	
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	94	94	1,582		1,676	Fish stock assessment support **	
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	148	148	728		876	Fish stock assessment support **	
28	Purse Seine	OPEN	all	MA	all	12	12	0		12	Fish stock assessment support	
29	Purse Seine	OPEN	all	NE	all	20	20	0		20	Fish stock assessment support	
30	Scallop Dredge	AA	GEN	MA	all	0					Industry funded * (see Row 32)	
31	Scallop Dredge	AA	GEN	NE	all	0					Industry funded * (see Row 33)	
32	Scallop Dredge	AA	LIM	MA	all	500		246		246	Industry funded * (Rows 9, 10, 30, & 32)	
33	Scallop Dredge	AA	LIM	NE	all	254		364		364	Industry funded * (Rows 31 & 33)	
34	Scallop Dredge	OPEN	GEN	MA	all	208					Industry funded * (see Row 35)	
35	Scallop Dredge	OPEN	GEN	NE	all	15		248		248	Industry funded * (Rows 11, 13, 34, & 35)	
36	Scallop Dredge	OPEN	LIM	MA	all	585					Industry funded * (see Rows 37)	
37	Scallop Dredge	OPEN	LIM	NE	all	821			1,845	1,845	Industry funded * (Rows 12, 36, & 37)	
38	Danish Seine	OPEN	all	MA	all	0	0	0		0		
39	Mid-water Paired & Single Trawl	OPEN	all	MA	all	0	0	0		0		
40	Mid-water Paired & Single Trawl	OPEN	all	NE	all	45	45	0		45	Fish stock assessment support	
41	Pots and Traps, Fish	OPEN	all	MA	all	19	19	0		19	Fish stock assessment support	
42	Pots and Traps, Fish	OPEN	all	NE	all	24	24	0		24	Fish stock assessment support	
43	Pots and Traps, Conch	OPEN	all	MA	all	30	30	0		30	Fish stock assessment support	
44	Pots and Traps, Conch	OPEN	all	NE	all	26	26	0		26	Fish stock assessment support	
45	Pots and Traps, Hagfish	OPEN	all	NE	all	0	0	0		0		
46	Pots and Traps, Shrimp	OPEN	all	NE	all	0	0	0		0		
47	Pots and Traps, Lobster	OPEN	all	MA	all	51	51	0		51	Fish stock assessment support	
48	Pots and Traps, Lobster	OPEN	all	NE	all	165	165	0		165	Fish stock assessment support	
49	Pots and Traps, Crab	OPEN	all	MA	all	0	0	0		0		
50	Pots and Traps, Crab	OPEN	all	NE	all	0	0	0		0		
51	Beam Trawl	OPEN	all	MA	all	0	0	0		0		
52	Beam Trawl	OPEN	all	NE	all	0	0	0		0		
53	Dredge, Other	OPEN	all	MA	all	19	19	0		19	Fish stock assessment support	
54	Ocean Quahog/Surcliam Dredge	OPEN	all	MA	all	76	0	0		0		
55	Ocean Quahog/Surcliam Dredge	OPEN	all	NE	all	63	0	0		0		
56+	Otter Trawl	OPEN	all	NE	smR	0	0	0		0		
Herring management coverage							646	646		646	Coverage associated with Row 40*	
MMPA coverage							566	566		566	Coverage associated with Rows 22-27 ***	
Additional coverage beyond 26% ASM requirement							658	658		658	Coverage associated with ASM groundfish fleets*	
<b>Total</b>						<b>19,732</b>	<b>6,001</b>	<b>7,798</b>	<b>2,703</b>	<b>16,502</b>		
<b>Step 6</b>		Agency Fleets (Sea Days Needed)				17,299						
		Industry Fleets (Sea Days Needed)				2,433						
<b>Step 7</b>		Agency Fleets (Sea Days Funded)				6,001						
		Agency Fleets (Sea Days Funded)				6,586						
		Agency Fleets (Sea Days Funded)				566						
		Agency Fleets (Sea Days Funded)				646						
		Industry Fleets (Sea Days Funded)				2,703						
<b>Step 8</b>		Agency Fleet Difference				-11,298						
		Industry Fleet Difference				270						
		Turtle Gear Types				MA Trawl	4,838					
						MA Gillnet	2,593					
						MA Dredge	1,293					

KEY: AF = Agency funded fleets IF = Industry funded fleets  
 Steps independent of prioritization approach  
 Prioritization Steps      Fleets with reduction in sea days

Prioritized days  
 Non-prioritized days (ASM)  
 Non-prioritized days (MMPA)  
 Non-prioritized days (Herring Management)  
 Industry-funded scallop days

Appendix Table 1. Stratification abbreviations used for 2014 fleets.

Abbreviation	Definition
MA	Mid-Atlantic ports (CT and southward)
NE	New England ports (RI and northward)
sm	Small mesh (less than 5.5 in)
smR	Small mesh (4.5 in)
lg	Large mesh (5.5 to 7.99 in for gillnet; 5.5 in and greater for otter trawl)
xlg	Extra-large mesh (8 in and greater)
LIM	Limited access category
GEN	General category
OPEN	Non-access area
AA	Access area

Appendix Table 2. The number of Vessel Trip Reports (VTR) trips, by fleet and calendar quarter (Q) during July 2012 through June 2013. “P” indicates fleets with “pilot” designation. The percentage and cumulative percentage for each fleet, when fleets are ranked from smallest to largest, is also presented. The shaded cells represent the fleets containing the lowest cumulative 1% of all trips.

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	VTR TRIPS					Pilot	Row	VTR TRIPS	% of Trips	VTR TRIPS Cum %	Row	VTR TRIPS	VTR TRIPS Cum %
						Q3	Q4	Q1	Q2	TOTAL								
1	Longline	OPEN	all	MA	all	59	24	20	56	159	P	9	1	<0.1%	0.00%	1	1.09%	
2	Longline	OPEN	all	NE	all	742	184	136	58	1,120		25	3	<0.1%	0.00%	2	8.49%	
3	Hand Line	OPEN	all	MA	all	1,702	756	131	796	3,385	P	10	6	<0.1%	0.01%	3	41.61%	
4	Hand Line	OPEN	all	NE	all	1,391	207	35	407	2,040		13	6	<0.1%	0.02%	4	23.01%	
5	Otter Trawl	OPEN	all	MA	sm	1,624	750	393	802	3,569		16	6	<0.1%	0.02%	5	45.57%	
6	Otter Trawl	OPEN	all	MA	lg	1,595	907	939	1,382	4,823		14	7	<0.1%	0.03%	6	55.20%	
7	Otter Trawl	OPEN	all	NE	sm	1,298	728	444	845	3,315		39	10	<0.1%	0.04%	7	37.86%	
8	Otter Trawl	OPEN	all	NE	lg	2,287	1,979	1,848	1,787	7,901		56	12	<0.1%	0.06%	8	70.62%	
9	Scallop Trawl	AA	GEN	MA	all	1				1	P	15	18	<0.1%	0.08%	9	0.00%	
10	Scallop Trawl	AA	LIM	MA	all	4	1		1	6	P	46	21	<0.1%	0.10%	10	0.01%	
11	Scallop Trawl	OPEN	GEN	MA	all	105	23	52	149	329		21	25	<0.1%	0.13%	11	2.40%	
12	Scallop Trawl	OPEN	LIM	MA	all	5	3	9	11	28	P	30	27	<0.1%	0.16%	12	0.22%	
13+	Scallop Trawl	OPEN	LIM	NE	all	1	4	1		6	P	45	27	<0.1%	0.19%	13	0.02%	
14	Otter Trawl, Ruhle	OPEN	all	MA	lg	2	4	1		7	P	12	28	<0.1%	0.22%	14	0.03%	
15	Otter Trawl, Ruhle	OPEN	all	NE	sm	1		16	1	18	P	52	53	0.1%	0.28%	15	0.08%	
16	Otter Trawl, Ruhle	OPEN	all	NE	lg		2		4	6	P	31	61	0.1%	0.34%	16	0.02%	
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	15	22	16	18	71		51	70	0.1%	0.42%	17	0.50%	
18	Shrimp Trawl	OPEN	all	MA	all	256	64		3	323	P	17	71	0.1%	0.50%	18	2.04%	
19	Shrimp Trawl	OPEN	all	NE	all	87	13	443	30	573		20	71	0.1%	0.58%	19	4.75%	
20	Floating Trap	OPEN	all	MA	all	35	3		33	71	P	49	72	0.1%	0.66%	20	0.58%	
21	Floating Trap	OPEN	all	NE	all	13			12	25	P	50	76	0.1%	0.74%	21	0.13%	
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	675	480	343	308	1,806	P	38	155	0.2%	0.92%	22	14.46%	
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	371	1,095	497	371	2,334	P	1	159	0.2%	1.09%	23	25.60%	
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	71	464	381	1,061	1,977		53	212	0.2%	1.33%	24	20.75%	
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	2	1			3	P	29	319	0.4%	1.68%	25	0.00%	
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	3,446	1,441	320	807	6,014		18	323	0.4%	2.04%	26	61.87%	
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	965	441	297	810	2,513		11	329	0.4%	2.40%	27	28.38%	
28	Purse Seine	OPEN	all	MA	all	299	38		104	441	P	32	337	0.4%	2.78%	28	4.12%	
29	Purse Seine	OPEN	all	NE	all	230	29		60	319		36	375	0.4%	3.19%	29	1.68%	
30	Scallop Dredge	AA	GEN	MA	all	7	7	7	6	27	P	40	394	0.4%	3.63%	30	0.16%	
31	Scallop Dredge	AA	GEN	NE	all	29	10	3	19	61	P	28	441	0.5%	4.12%	31	0.34%	
32	Scallop Dredge	AA	LIM	MA	all	130	38	61	108	337		19	573	0.6%	4.75%	32	2.78%	
33	Scallop Dredge	AA	LIM	NE	all	240	199	75	198	712		42	703	0.8%	5.53%	33	6.32%	
34	Scallop Dredge	OPEN	GEN	MA	all	823	465	534	710	2,532		33	712	0.8%	6.32%	34	31.19%	
35	Scallop Dredge	OPEN	GEN	NE	all	882	770	970	1,251	3,873		41	840	0.9%	7.25%	35	49.86%	
36	Scallop Dredge	OPEN	LIM	MA	all	125	65	64	121	375		2	1,120	1.2%	8.49%	36	3.19%	
37	Scallop Dredge	OPEN	LIM	NE	all	368	200	179	502	1,249		43	1,162	1.3%	9.78%	37	12.46%	
38	Danish Seine	OPEN	all	MA	all	93	7		55	155	P	44	1,170	1.3%	11.08%	38	0.92%	
39	Mid-water Paired & Single Trawl	OPEN	all	MA	all			5	5	10	P	37	1,249	1.4%	12.46%	39	0.04%	
40	Mid-water Paired & Single Trawl	OPEN	all	NE	all	137	34	168	55	394		22	1,806	2.0%	14.46%	40	3.63%	
41	Pots and Traps, Fish	OPEN	all	MA	all	299	173	75	293	840	P	54	1,812	2.0%	16.47%	41	7.25%	
42	Pots and Traps, Fish	OPEN	all	NE	all	511	40	2	150	703	P	47	1,888	2.1%	18.56%	42	5.53%	
43	Pots and Traps, Conch	OPEN	all	MA	all	60	527	206	369	1,162	P	24	1,977	2.2%	20.75%	43	9.78%	
44	Pots and Traps, Conch	OPEN	all	NE	all	380	450	1	339	1,170	P	4	2,040	2.3%	23.01%	44	11.08%	
45	Pots and Traps, Hagfish	OPEN	all	NE	all	7	3	6	11	27	P	23	2,334	2.6%	25.60%	45	0.19%	
46	Pots and Traps, Shrimp	OPEN	all	NE	all			21		21	P	27	2,513	2.8%	28.38%	46	0.10%	
47	Pots and Traps, Lobster	OPEN	all	MA	all	920	382	136	450	1,888	P	34	2,532	2.8%	31.19%	47	18.56%	
48	Pots and Traps, Lobster	OPEN	all	NE	all	11,849	8,182	1,847	4,635	26,513		55	2,708	3.0%	34.19%	48	100.00%	
49	Pots and Traps, Crab	OPEN	all	MA	all	34	11		27	72	P	7	3,315	3.7%	37.86%	49	0.66%	
50	Pots and Traps, Crab	OPEN	all	NE	all	26	19	25	6	76	P	3	3,385	3.8%	41.61%	50	0.74%	
51	Beam Trawl	OPEN	all	MA	all	37	21	9	3	70	P	5	3,569	4.0%	45.57%	51	0.42%	
52	Beam Trawl	OPEN	all	NE	all	26	9		18	53	P	35	3,873	4.3%	49.86%	52	0.28%	
53	Dredge, Other	OPEN	all	MA	all	5	74	83	50	212	P	6	4,823	5.3%	55.20%	53	1.33%	
54	Ocean Quahog/Surfclam Dredge	OPEN	all	MA	all	506	426	451	429	1812	P	26	6,014	6.7%	61.87%	54	16.47%	
55	Ocean Quahog/Surfclam Dredge	OPEN	all	NE	all	840	569	591	708	2,708	P	8	7,901	8.8%	70.62%	55	34.19%	
56+	Otter Trawl	OPEN	all	NE	smR			2	10	12		48	26,513	29.4%	100.00%	56	0.06%	
<b>Total</b>						<b>35,616</b>	<b>22,344</b>	<b>11,843</b>	<b>20,444</b>	<b>90,247</b>			<b>90,247</b>					

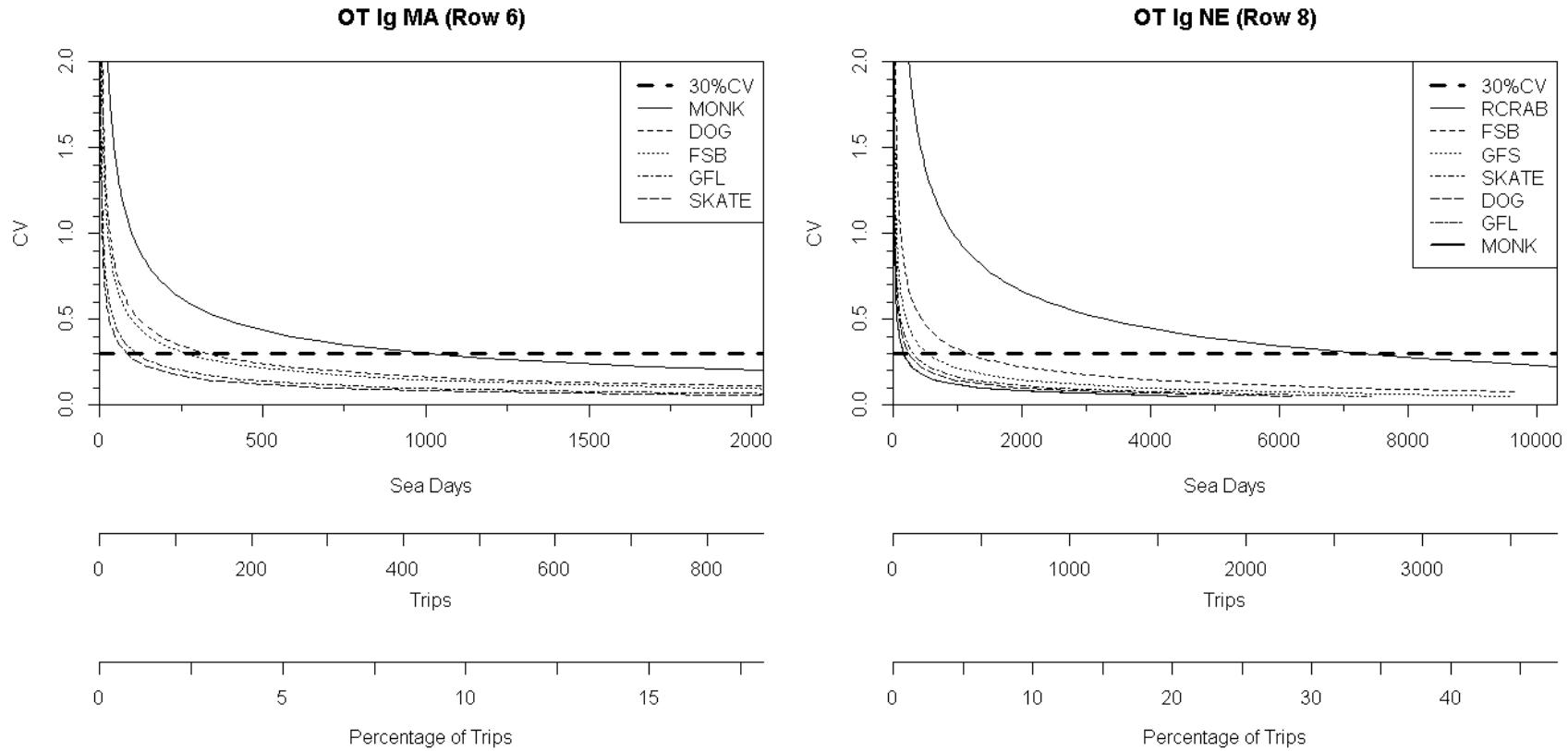


Figure 1. Results from the 2014 sample size analysis conducted for Mid-Atlantic large mesh otter fleet (Row 6) and the New England large mesh otter fleet (Row 8). The curves represent the relationship between the coefficient of variance (CV) and the sample size (sea days, trips and percent of trips) for each of the species groups that were not filtered out. The dash line is the 30% CV. For species group abbreviations, see Table 1. *Taken from Figure 3 in Wigley et al. (in press).*

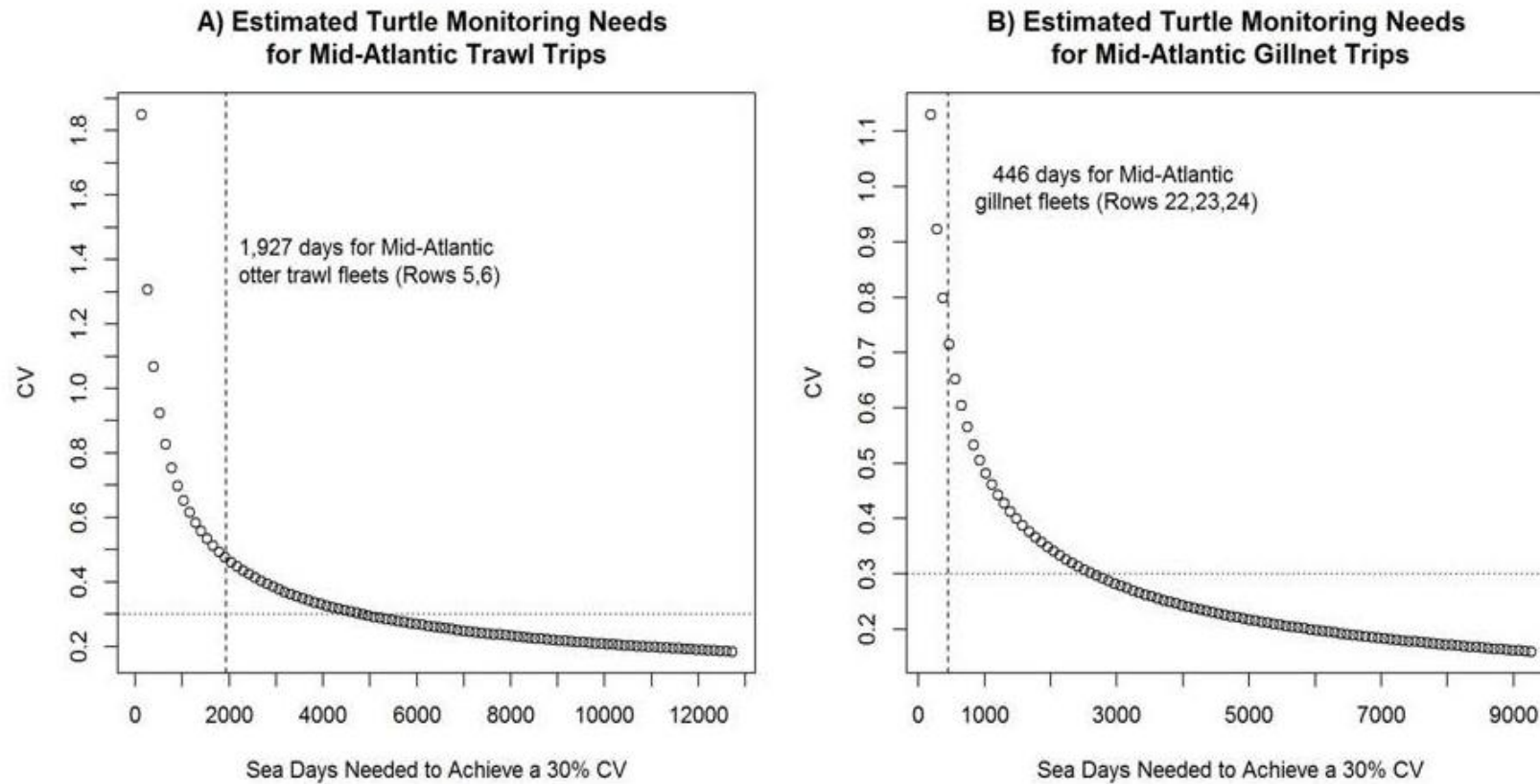


Figure 2. Expected CVs for estimates of turtle interactions in Mid-Atlantic otter trawl fleets (A) and Mid-Atlantic gillnet fleets (B), under the proposed observer sea day allocation for 2014. Vertical dashed lines indicate the number of sea day needs for fish and turtles combined.