Standardized Bycatch Reporting Methodology
Proposed 2011 Observer Sea Day Allocation
Consultation and Prioritization Process Response to Comments

Prepared for

Northeast Regional Coordinating Committee

by

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I. Introduction

The 2011 Standardized Bycatch Reporting Methodology (SBRM) sea day analysis[1] indicated that 19,507 sea days will be required to achieve a 30% coefficient of variation (CV) for discard estimates in the federal fisheries prosecuted in the New England (NE) and Mid-Atlantic (MA) regions. Based on the January provisional budget, there was a total of 10,650 funded days available for SBRM along with an industry-funded 3,254 days for a total of 13,904 days for the April 2011 to March 2012 period. The SBRM performance standard sea days exceed the total funded days by 5,603 days, thus a shortfall exists. As required by the SBRM Omnibus Amendment when a shortfall exists, the 2011 SBRM prioritization of sea days for the April 2011 to March 2012 period was presented to the New England Council on January 26, 2011 and to the Mid-Atlantic Council on February 10, 2011. The Northeast Fisheries Center Science (NEFSC) and the Northeast Regional Office (NERO) have received comments on the 2011 SBRM sea day prioritization from the Mid-Atlantic Fisheries Management Council (MAFMC), the New England Fisheries Management Council (NEFMC) and the public, specifically the Pew Environment Group (PEG, March 9, 2011) and the Coalition for the Atlantic Herring Fishery's Orderly, Informed and Responsible Long Term Development (CHOIR, March 10, 2011).

[1] Standardized Bycatch Reporting Methodology Sea Day Analysis and Prioritization 2011 (January 25, 2011) Available on-line at:
http://www.nefsc.noaa.gov/femad/fsb/SBRM/2011/2011-SBRM-Sea-Day-Analysis-Prioritization.pdf

In this report, we provide a summary of the comments[2], specific responses to the comments, and, where appropriate, the proposed revisions (re-prioritization of sea days). There are 10,936 agency-funded days along with 3,354 industry-funded sea days for a total of 14,290 days, with 14,004 days available for SBRM. A total of 286 days (14,290-14,004) are allocated for coverage of protected species, but do not provide information on fish bycatch.

II. Funding available for the April 2011 to March 2012 period – Revised

There are two funding source categories: agency-funded and industry-funded. Within the agency-funded category, there are five sub-categories.

- **Agency-funded**: There is no change in agency funding[3]; the numbers of sea days used in the initial prioritization remain unchanged. Based on the provisional January 3, 2011 budget, the NEFSC has funds for 10,936 sea days. The funding sources for these sea days include: Atlantic Coast (544 days), New England Groundfish [3,829 Northeast Fisheries Observer Program (NEFOP) sea days, 6,150 At-Sea Monitoring (ASM) days partially funded by National Observer Program (NOP), Reducing Bycatch (127 days), and Marine Mammal Protection Act (MMPA; 286 days). Each funding source has funding constraints (days targeted for specific species and/or data category).

    - 286 days have been excluded from SBRM due to sampling protocols that are specific to protected species and are not applicable for fish. However, these days will provide observer coverage for sea turtles above that which is allocated within SBRM.

    - 10,650 agency-funded days are applicable for SBRM.

- **Industry-funded**: The number of industry-funded sea days available for monitoring of scallops depends on 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 on projected landings and expected prices the RSA program is expected to generate $2.6M in support of discard monitoring of the scallop fleets. A compensation rate analysis was undertaken to support observer coverage of the nine industry-funded scallop fleets. The sea days for the nine industry-funded fleets are presented in Rows 9, 10, 12, 27, 28, 29, 30, 33, and 34 (Table 1).

    - Based on a compensation rate analysis conducted on March 28, 2011, a total of 3,354 sea days can be funded: 1,713 days for Open areas, 413 days for Delmarva Access Area (DMV), 413 days for Hudson Canyon Access Area (HC), 620 days for Closed Area I (CAI), and 195 days for Closed Area II (CAII).

[2] Comments received are available online at:
http://www.nefsc.noaa.gov/femad/fsb/SBRM/SBRM_Annual_Discard_Reports.htm
[3] The Department of Commerce FY11 budget remains under a Continuing Resolution.

        - The industry-funded schedule runs March 1 to February, a 12 month period that is shifted one month from the NEFOP sea day schedule of April to March.
        - A letter[4] to vessel owners dated February 18, 2011 describes the set-aside compensation rate calculations.

    - Coverage of the nine fleets depends on industry activity among these fleets; however, the prioritized sea days represent the maximum coverage (i.e. caps). (Table 2).

    - 3,354 industry-funded days are included in the SBRM based on the compensation rate analysis conducted in March 28, 2011.

    - Limited Access General Category (LAGC) open area fleets are not industry-funded fleets (Rows 11, 31, 32; Table 1).

- Revised SBRM total sea days equals 14,004 days.

Comparison of sea days between January and March, by funding source; sea days available to SBRM are in bold.

Funding Source	**January**	**March**
Agency-funded Total	10,936	10,936
Agency-funded applicable to SBRM	**10,650**	**10,650**
Agency-funded not applicable to SBRM	286	286
Industry-funded Total	**3,254**	**3,354**
SBRM Total	**13,904**	**14,004**

III. Summary of comments received

The MAFMC is concerned that proposed sea sampling intensity for fisheries prosecuted in the Mid-Atlantic region will not be sufficient to produce acceptably precise bycatch estimates in most fisheries. Of particular concern, the small-mesh trawl fisheries in the Southern New England and Mid-Atlantic regions will not be sufficiently monitored to obtain acceptable precision for butterfish bycatch estimates in the directed *Loligo* fishery. Adequate coverage in the *Loligo* fishery is one of the MAFMC's highest priorities and the Council requests the necessary sea days to achieve at least a 30% CV for butterfish discards in the *Loligo* fishery. Precise estimates of butterfish discards are needed in the specification of Acceptable Biological Catch (ABC) for butterfish. Parenthetically we wish to emphasize that the '*Loligo* fishery' is a sub-fleet of the SBRM MA small-mesh otter trawl fleet. The '*Loligo* fishery' is defined based

[4] Available on-line at http://www.nero.noaa.gov/nero/nr/nrdoc/11/11ScalCompRate2011.pdf (Letter to vessel owners dated February 18, 2011.)

on the outcome of the trip, which is inconsistent with SBRM fleet definition. The *Loligo* fishery will however be "identifiable" under the provisions of the Pre-Trip Notification System (PTNS) for Amendment 10 (implemented on January 1, 2011). The MAFMC also reiterated its request for coverage of fisheries that generate river herring discards.

The MAFMC stated that prioritization and funding of observer coverage continues to be dedicated to compliance monitoring for New England groundfish at the expense of bycatch monitoring in the Mid-Atlantic, and the generally low coverage of Mid-Atlantic fleets continues to hamper the MAFMC's ability to effectively manage fisheries under their jurisdiction.

The NEFMC strongly supports the recommendation of high coverage for compliance monitoring of fleets associated with New England groundfish. The NEFMC requested that the details of the projected observer sea days for the industry-funded scallop fleets be reviewed by the Scallop Plan Development Team (PDT) and that the details be further explained.

Public comments from PEG and CHOIR included concerns regarding the observer coverage in the mid-water trawl fleets, purse seine fleets, and the small-mesh otter trawl fleets. In the following sections we provide more details on the specific comments.

IV. Response to Comments

Funding Issues

As stated in previous SBRM prioritization documents, the shortfall in the Mid-Atlantic region has been an on-going issue since the beginning of the sea sampling program in the late 1980's. Constraints associated with Congressional/Headquarters funding restrict its use to a particular region. These restrictions limit re-distribution of sea days between the Mid-Atlantic and New England regions. The concerns expressed in the comments are directly related to a general lack of funding. Any revisions of funding are policy matters beyond the scope of the Agency. Unrestricted funds would support all fishery management plans associated with the SBRM Omnibus Amendment. The roles and responsibilities of Northeast Regional Coordinating Committee (NRCC) agencies to identify funding sources or admissible changes in funding allocations are important policy considerations.

Compliance Issues

Observer monitoring of bycatch must meet multiple objectives that include: bycatch monitoring of individual species (fish and turtles), compliance monitoring of annual catch entitlements (ACEs), and quota-monitoring of hard total allowable catch (TAC). SBRM focuses on monitoring to achieve acceptable measures of precision. Quota monitoring (including monitoring for compliance with regulations) is more challenging since increased coverage may be necessary to ensure more frequent in-season reports of discards rates. Monitoring rates for compliance with regulations often must be higher to reduce the scope for potential bias in estimation. It must be emphasized that SBRM does not consider the additional monitoring

requirements for compliance. Increases in monitoring for compliance issues are based on the expectation that the observed variability in discard rates will include the normal variation plus potential, but unquantified, bias. Therefore these requirements are treated in a more ad hoc fashion. At present, we cannot distinguish discard estimates for vessels that are being monitored for compliance from those that are monitored for precision.

Notwithstanding these concerns, we recognize the importance of having a sea-day allocation program oriented towards compliance issues. A Pre-Trip Notification System[5] (PTNS) has been implemented.

The Regional Administrator has requested coverage for groundfish compliance monitoring as follows:

30% At-Sea Monitors (ASM) of sector groundfish trips;
22% ASM of common pool groundfish trips;
8% Northeast Fisheries Observer Program (NEFOP) coverage

Thus fleets associated with New England groundfish (gear types include longline, otter trawl and gillnet) and regions included in Sector Operations Plans (regions may include Mid-Atlantic as well as New England) will have higher coverage for compliance monitoring than the coverage associated with the SBRM variance-based performance standard.

Distinctions between Fisheries and Fleets

The sea-day allocation process relies on the identification of strata, e.g., groups of vessels in a particular port and quarter, based on observable properties before a vessel begins a fishing trip. The list of vessels with these observable properties can be used to generate a random sample. Moreover, these observable properties can be used to identify the total size of the strata and the landings from the unobserved fraction of the fleet. Together, the random sample and observations from the unobserved fleet allow for estimation of total discards. In contrast, properties of vessels that are the result of the fishing activity, e.g., the mix of species landed, are not known in advance and cannot be used for allocating sampling effort. Without a Pre-Trip Notification System (PTNS) it is not possible to allocate observers to yellowtail flounder trips or *Loligo* trips, nor is it possible to identify the necessary expansion factors based on post-trip identification of these same outcomes. The PTNS addresses the issue of identifying the subfleet of vessels that intend to catch Loligo above a threshold of 2,500 lbs. However discards for vessels that that catch less than 2,500 lbs of Loligo must still be estimated for the small mesh otter trawl fleet. At best, an allocation program that operates at a multi-fleet level can improve the chances of obtaining estimates of discards of some species of interest. However, it can never ensure this unless all vessels are monitored.

Plan development teams and other groups charged with crafting monitoring programs will often base their results on analyses of species or stock specific information. Such analyses are often at a finer level of resolution than can be considered within the SBRM. These post hoc analyses will

[5] For more information on the PTNS for New England groundfish and the *Loligo* fishery, see http://www.nefsc.noaa.gov/femad/fishsamp/fsb/Observer_Pre-Trip_Notification.html

also include attributes of the trip itself (e.g., species composition) as a way of gaining insight into factors responsible for observed discard rates. Such analyses can lead to further refinement of allocation *if* it leads to improved stratification based on observable properties. For the aforementioned reasons, the estimated sample sizes may be underestimates if they fail to consider the probability that sending an observer on a vessel that often catches or intends to catch a certain species does not ensure that a trip will provide such information.

Relationship between the SBRM Allocation and Optimization Methods

The SBRM focuses on 15 species groups and derives sea day requirements for 51 fleets based on the relative variability (coefficient of variation or CV) of discard estimates for these species groups. A filtering algorithm is used to reduce the coverage for fleets whose landings or discards represent a small fraction of the total fishing mortality imposed on a species group. Further gains in precision can be obtained by using optimal allocation methods.

Such gains in precision are dependent on the premise that the previous year's observations and fishing patterns persist in the next deployment year. The anticipated but unknown changes in fishing patterns, industry activity, changes in discard rates and variability of discard rates, reduced the utility of optimization methods for 2011-2012. Formal optimization methods, apart from the application of filtering and constraints, were not applied. However, the initial prioritized sea days were proportionally distributed among fleets using VTR sea days with funding constraints even though future behavior is unknown. Actual coverage rates will depend on fishing activity among the fleets. Higher or lower sample sizes are now required for some components depending on changes in variability within a fleet over time.

This allocation relies primarily on statistical methods but incorporates expert judgment and client priority requests to assign sea days while keeping within the funding constraints. Recent changes in management regulations to implement Sectors have resulted in the development and implementation of the Pre-Trip Notification System. Factors that reduced the applicability of optimization methods for 2011-2012 include: 1) expansion of coverage by the Pre-Trip Notification System, increasing overall coverage rates in groundfish, 2) potential changes in the discarding rates in Sector fleets, and 3) unknown changes in activities by fleets. Instead, projected sea-day coverage based on proportional allocation among fleets based upon VTR days during the July 2009 to June 2010 period were used to assign sea days for fleets that are associated with the PTNS regulations (New England Groundfish fleets). **These sea day assignments should be considered as provisional.** Actual coverage will depend on industry activity among fleets within this funding category.

Industry Funded Coverage and Compensation Rates

The letter[4] dated February 18, 2011 from the Regional Administrator to Vessel Owners describes the January 14, 2011 compensation rate analysis for scallop vessels that carry an observer under the industry funded observer program. The letter also states that industry comments will be considered as the compensation rates are evaluated throughout the fishing year. This letter is

available to the Scallop Plan Development Team and others for review. Below is a summary of the factors considered in the compensation rate analyses.

The most important considerations include a daily compensation rate that does not induce bias in the vessel selection process or fishing practices when an observer is on board, and ensures that overall coverage will be sufficient to meet, or nearly meet, the SBRM precision standards. The proposed compensation rate of 180 lbs per day in access areas and 0.08 days-at-sea (DAS) charged per DAS used for observed trips seems to strike a balance between these objectives. The expected revenue from such additional landings should not make scallopers averse or prone to carry observers or to alter their trip durations or practices.

The observer compensation rates (180 lbs/day in access areas, and 0.08 DAS/day in open areas) were set in order to give sufficient compensation for the cost of carrying an observer, including the cost of harvesting the additional scallops[6]. The open area compensation was decreased from 0.10 DAS in 2010 to 0.08 DAS in 2011 because (1) LPUE and scallop prices are anticipated to be higher in 2011 than what had been projected in 2010; (2) the compensation rate of 0.08 is the highest rate at which SBRM standards can be met for all species groups (except for sea turtles in 7 of the 9 industry-funded fleets). For the Mid-Atlantic Limited access scallop trawl fleets (open and access areas, Rows 10 and 12), the number of sea days have been determined by pilot coverage. It is recognized that pilot coverage may not always provide the best estimate of sea days needed in the absence of precision-based allocations, and due to the low number of vessels in these fleets, the number of pilot-based sea days may have been overestimated.

The SBRM sea day analysis and the compensation rate analysis estimate sea day coverage separately for open and access areas within the scallop fishery. To maintain the set-aside compensation, sea days should not be re-assigned across strata without full consideration of the compensation rate analyses

The compensation rate analysis was modified on March 28, 2011 during the process of finalizing the SBRM. The March 28th compensation rate analysis continued to use 180 pounds and 0.08 Days-At-Sea (DAS) based on costs and expected revenue from scallops but differs from the January 14, 2011 analysis by using 137 observer set-aside DAS, instead of 129 observer set-aside DAS, accounts for the differences in LPUE between limited access and general category vessels, and incorporates updated anticipated LPUE and price information based on expectations for the 2011 fishing year. The change in the set-aside DAS was a result of final submission of Framework 22, which included a revised DAS set-aside value and changes to the assumptions for price and LPUE. While the compensation rates remain the same, a revised permit holder letter will describe the differences in fishery assumptions and will be disseminated to the fishing industry prior to the implementation of Framework 22, if approved.

[6] At higher compensation rates, the DAS set-aside is utilized faster, reducing the observer coverage level that can be funded by the set-aside.

Coverage of Mid-water Trawl and Purse Seine fleets

The SBRM analysis to estimate the number of sea days needed to achieve a 30% CV for discard estimates in each fleet is updated annually using the most recent available data for a 12 month period. The sea day standard is determined by the maximum sea days needed for a given species group among the 15 SBRM species within each fleet. In SBRM 2011, the SBRM standard sea days for Rows 35 & 36 were 30 sea days and 190 sea days respectively. Row 35 is based on pilot coverage[7] while Row 36 is based on the sea days needed for spiny dogfish (Tables 3 and 4). In SBRM 2010, the standard sea days needed for Row 36 was 379 sea days based on the small-mesh groundfish species group (Table 4 of the 2010 SBRM Sea Days and Prioritization[8]).

The use of the previous year's data to estimate appropriate sampling coverage in a future year is predicated on two assumptions: 1) the discard ratio and its variance remain constant, and 2) the distribution and magnitude of fishing effort remains constant in the relevant strata. The sufficiency of the predicted number of sea days generated using data from one year can change in response to a number of factors that include: variability in the discard estimates among the 15 SBRM species groups, changes in fishing patterns, changes in distribution and abundance of species groups, etc. When such changes are likely it is prudent, if possible, to increase coverage rates.

The prioritized sea days for 2011 for the mid-water trawl and purse seine fleets (Row 35 & 36 and 25 & 26, respectively; Table 1) represent allocations based on either the SBRM standard sea days or the 20% of industry sea days in the previous year, whichever value is higher. The 20% monitoring level is used in the 2011 prioritization process to incorporate the NEFMC expectation of monitoring coverage: *"The Council expects that observer coverage will be 20% or more."*[9] . Three of these four fleets have prioritized sea days that exceed the SBRM standard due to NEFMC's expectation to attain the 20% monitoring of these fleets. The fourth fleet (Row 35) is prioritized using the SBRM standard.

While the coverage of the NE mid-water trawl fleet decreased in 2011, this decrease is not influenced by increases or decreases in the other three fleets. The statistical methods used to estimate sea days and to prioritize these days in each fleet are independent of one another. Thus, an increase or decrease in one does not necessarily result in a change for another fleet. The sea days allocated to fully cover these fleets are generally supported by New England groundfish funding, with some funding by Reducing Bycatch funds. We also note that the proposed allocation of 235 days to the NE mid-water trawl fleet (Row 36) exceeds the coverage necessary to achieve 30% CV for all species groups. The expected CV for spiny dogfish is 0.265 (Table 3). In 2010 the high discard rates and low precision for small mesh groundfish species led to a higher coverage rate (379 days); this pattern did not persist in the 2011 analyses. We also note that 127 additional days have been allocated to cover targeted herring trips in Closed Area I. This increment will increase coverage rates in both mid-water trawl fleets (Rows 35 and 36).

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[7] Pilot coverage (2% of the quarterly VTR trips) is further described in Equation 9 in Appendix 1 of 2011 SBRM Sea Day Analysis and Prioritization http://www.nefsc.noaa.gov/femad/fsb/SBRM/2011/2011-SBRM-Sea-Day-Analysis-Prioritization.pdf

[8] 2010 SBRM Sea Day Analysis and Prioritization http://www.nefsc.noaa.gov/femad/fsb/SBRM/2010/2010-SBRM-Sea-Day-Analysis-Prioritization-01262010.pdf

[9] FW 43 Multispecies FMP; February 23, 2006; page 7.

River herring

With regard to the SBRM amendment, sea day allocation decisions are based on the attainment of precision standards for the set of species under federal FMPs. The allocations are focused on those fleets which in aggregate have the greatest cumulative effect on the mortality of the species groups. Prioritized allocations are further constrained by existing funding constraints. River herring, comprising both alewife and blueback herring, is not a federally managed species group and is not one of the 15 species groups included in SBRM amendment. However, the river herring species group is indeed monitored, along with all other individual species, as part of the sampling protocols of the Northeast Fisheries Observer Program. As stated in the 2011 Sea Day and Prioritization document, additional sea days would be needed in the New England large-mesh otter trawl (Row 8) to estimate river herring bycatch with acceptable precision (note: discards is synonymous with bycatch and should not be confused with non-targeted landings). Fleets that discard river herring are generally not the same fleets that land this species group as non-targeted species. Non-targeted landings can be monitored through land-based reporting protocols.

When additional funds are available, fleets can be covered to meet the needs of species groups beyond the suite of SBRM species. Days have been allocated to small-mesh otter trawl fisheries in the NE and MA regions that will provide monitoring for all species.

It should be noted that some studies (including Cournane et al. MS 2010 and Lessard and Bryan MS 2011, as mentioned in PEG's comments) report estimates of river herring catch and/or bycatch that rely on ratio estimates based on discards to number of tows. The raising factors for total discards thus rely on obtaining an accurate estimate of the total number of tows (or sets for fixed gear) across all fleets. The SBRM Amendment[10] considered effort based ratio estimators based on total days at sea as a raising factor. Estimates of total fishing effort based on tows rely on the assumption that total tows per trip are accurately reported in the Vessel Trip Reports.

Methods for Dealing with Observer Coverage Shortfalls

The initial 2011 SBRM sea day prioritization is an integrated treatment of bycatch monitoring requirements. Increases to prioritized allocations can improve precision for some fleets but will likely degrade the precision of discard estimates for one or more species in fleets that donate days. To the extent possible, when additional funding is available, it is used to augment initial allocations to prevent degradation of precision.

Possible options for dealing with observer coverage shortfalls include

1) No revisions (accept initial prioritization)

[10] Northeast Region Standardized Bycatch Reporting Methodology: An Omnibus Amendment to the Fishery Management Plans of the New England and Mid-Atlantic Fishery Management Councils. June 2007. 642 p. Available on-line at: http://www.nefmc.org/issues/sbrm/index.html

2) Adjust the initial sea day prioritization using an ad-hoc approach informed by the expected precisions attainable by species groups using the SBRM sea day analyses and constraints imposed by regionalized funding.

Since no additional agency funding was available to augment initial sea day allocations, re-allocation of existing sea days was performed.

It is important to note that failure to attain the 30% CV standard for a given fleet does not necessarily mean that the predicted precision for all species groups will exceed 30%. Moreover, attainment of the 30% CV standard for a particular fleet implies that all of the species groups will be at or below 30%.

V. Summary of revised sea days and associated consequences of revisions, by fleet.

Table 1 and 2 summarize the initial prioritization (13,904 days) and revised prioritization (14,004 days) for 2011. To address concerns regarding the coverage of Mid-Atlantic small-mesh otter trawl fleet (Row 5), an additional 93 sea days have been assigned to this fleet by re-assigning existing sea day allocations. The industry-funded scallop fleets have increased by 100 days due to the refinement of the compensation rate analysis conducted in January 2011. A re-allocation of 15 sea days was made to monitor sea turtle bycatch in the Mid-Atlantic inshore crab trawl.

The analysis to derive the expected CV achieved for each species group was updated (Table 3) using the revised 2011 prioritized sea days (Table 1 column labeled "*Prioritized April 2011 – March 2012 Coverage REVISED*"). As described in the 2011 SBRM Sea Day Analysis and Prioritization document, there are 21 fleets with sufficient data to support sample size analysis based on the variance of the discard estimates. The fleets designated as in need of pilot coverage cannot be evaluated and the fleets with no prioritized sea days are not evaluated. It is important to note that some species groups have been filtered out through the importance filter process and thus do not have an achieved CV; these species groups have been denoted with an '*' in Table 3.

Of the 49 species groups with an estimable CV, 39 species groups (79%) maintained a CV less than or equal to the SBRM 30% CV standard (Table 3). As noted above, the fleets associated with the New England groundfish fisheries (large-mesh otter trawls, gillnets, etc) have more sea days than required by SBRM due to compliance monitoring needs. Consequently, the expected achieved CVs are substantially lower than the 30% CV for most species groups. The 108 sea day reduction in the NE large-mesh otter trawl (Row 8) fleet resulted in only a slight decrease in precision for all species groups and, with the exception of red crab, all species groups remained well below the SBRM performance standard. The expected achieved CVs for species groups given the shortfall and surplus of sea days across fleets are for illustrative purposes due to the provisional nature (dependent on industry activity) of the 2011 prioritized sea days.

The usefulness of Table 3 is demonstrated in rows where the prioritized sea days are less than the SBRM performance standard. For example, the sea days for the MA small mesh otter trawl (Row 5) have been increased to 709 days due to the MAFMC concern over butterfish (note: this increase represents the maximum days which can be re-allocated given the funding constraints

associated with the funding source of these additional days). The expected achieved CV is 35% for the species group Squid, Butterfish and Mackerel (SBM). It would take an additional 228 sea days (using Table 4, Row 5: 937 – 709 = 228) to achieve a 30% CV. For each species group of interest, the above comparisons can be made using the species group and fleet information provided in this document.

Further improvements in precision of discard estimates are limited by total funding and constraints on funding by region or species group. The SBRM feedback process with the Councils ensures that priorities other than precision standards alone can be incorporated into the planned sea day allocations. The SBRM also provides a mechanism for evaluating the tradeoffs induced by the inclusion of other priorities. The observer program and fishery management are changing rapidly with the use of sectors in groundfish fisheries, reliance on industry funded programs for scallop fisheries, proposed increases in coverage for vessels with sea herring permits, and real-time estimation of discards for butterfish. These changes represent fundamental changes to the basis of the Standardized Bycatch Reporting Methodology and lead to an allocation system that relies more heavily on adaptive and systematic sampling of various vessel via the PTNS rather than expectations of fishing activities by fleets based on previous years' data.

Table 1. 2011 Standardized Bycatch Reporting Methodology Prioritization sea days for April 2011 to March 2012, based on data from July 2009 to June 2010.

Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2011 SBRM Standard Sea Days	Prioritized April 2011-March 2012 Coverage (January 2011)	***Prioritized April 2011 - March 2012 Coverage REVISED (March 2011)***
1	Longline	OPEN	all	MA	all	79	44	44
2	Longline	OPEN	all	NE	all	184	237	237
3	Hand Line	OPEN	all	MA	all	74	0	0
4	Hand Line	OPEN	all	NE	all	49	419	419
5	Otter Trawl	OPEN	all	MA	sm	1,449	616	709
6	Otter Trawl	OPEN	all	MA	lg	2,835	820	820
7	Otter Trawl	OPEN	all	NE	sm	4,274	529	529
8	Otter Trawl	OPEN	all	NE	lg	5,183	4,235	4,127
9 +	Scallop Trawl	AA	GEN	MA	all	12	30	32
10 +	Scallop Trawl	AA	LIM	MA	all	88	34	7
11	Scallop Trawl	OPEN	GEN	MA	all	29	0	0
12	Scallop Trawl	OPEN	LIM	MA	all	95	30	10
13 +	Otter Trawl, Ruhle	OPEN	all	NE	lg	22	11	11
14 +	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	21	15	15
15	Shrimp Trawl	OPEN	all	MA	all	74	0	0
16	Shrimp Trawl	OPEN	all	NE	all	18	18	18
17 +	Floating Trap	OPEN	all	MA	all	3	0	0
18 +	Floating Trap	OPEN	all	NE	all	9	0	0
19	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	39	0	0
20	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	755	206	206
21	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	86	324	324
22	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	12	0	0
23	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	147	1,822	1,822
24	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	256	611	611
25	Purse Seine	OPEN	all	MA	all	9	43	43
26	Purse Seine	OPEN	all	NE	all	23	112	112
27	Scallop Dredge	AA	GEN	MA	all	29	40	48
28	Scallop Dredge	AA	GEN	NE	all	17	60	50
29	Scallop Dredge	AA	LIM	MA	all	178	723	739
30	Scallop Dredge	AA	LIM	NE	all	170	755	765
31	Scallop Dredge	OPEN	GEN	MA	all	43	43	43
32	Scallop Dredge	OPEN	GEN	NE	all	68	68	68
33	Scallop Dredge	OPEN	LIM	MA	all	1,417	935	1,045
34	Scallop Dredge	OPEN	LIM	NE	all	658	647	658
35	Mid-water Paired & Single Trawl	OPEN	all	MA	all	30	30	30
36	Mid-water Paired & Single Trawl	OPEN	all	NE	all	190	235	235
37	Pots and Traps, Fish	OPEN	all	MA	all	24	0	0
38	Pots and Traps, Fish	OPEN	all	NE	all	12	85	85
39 +	Pots and Traps, Conch	OPEN	all	MA	all	20	0	0
40 +	Pots and Traps, Conch	OPEN	all	NE	all	15	0	0
41 +	Pots and Traps, Hagfish	OPEN	all	MA	all	3	0	0
42 +	Pots and Traps, Hagfish	OPEN	all	NE	all	60	0	0
43 +	Pots and Traps, Shrimp	OPEN	all	NE	all	8	0	0
44	Pots and Traps, Lobster	OPEN	all	MA	all	66	0	0
45	Pots and Traps, Lobster	OPEN	all	NE	all	452	0	0
46	Pots and Traps, Crab	OPEN	all	MA	all	12	0	0
47	Pots and Traps, Crab	OPEN	all	NE	all	53	0	0
48 +	Beam Trawl	OPEN	all	MA	all	29	0	0
49 +	Beam Trawl	OPEN	all	NE	all	14	0	0
50 +	Dredge, Other	OPEN	all	MA	all	21	0	0
51	Ocean Quahog/Surf Clam Dredge	OPEN	all	MA	all	61	0	0
52	Ocean Quahog/Surf Clam Dredge	OPEN	all	NE	all	32	0	0
New	Crab Trawl	OPEN	all	MA	all			15
	SAP/B day/US-CAN (now covered as part of NE groundfish)						0	0
	Herring CAI coverage						127	127
	Discovery Days						0	0
Total Days						**19,507**	**13,904**	**14,004**

+ = new fleets in 2010 and 2011.

Table 2. Summary of recommended changes in 2011 sea day allocation.

Fishery	Initial Sea Day Allocation	Revised Sea Day Allocation	Comments/Rationale
Agency-Funded Fleets			
MA small-mesh Otter Trawl (Row 5)	616	709	15 days were re-allocated from this fleet to monitor sea turtle bycatch in the Mid-Atlantic inshore crab trawl fleet (new fleet; see below). 108 sea days were re-allocated to this fleet from New England large-mesh otter trawl (Row 8) using New England Groundfish funding. This increase represents the number of sea days needed to lower the CV from 38% to 30% for small-mesh groundfish (GFS; Table 3). These additional sea days will increase the monitoring for small-mesh groundfish as well as for other species groups such as squid-butterfish-mackerel and river herring. It would require an additional 228 days to lower the CV from 35% to 30% for the squid-butterfish-mackerel species group. The net result of re-allocation is 93 sea days.
NE large-mesh Otter Trawl (Row 8)	4,235	4,127	108 sea days were re-allocated from this fleet into Mid-Atlantic small-mesh otter trawl (Row 5). The decrease in sea days only slightly lowers the CV for each of the species groups; however, all species groups, except red crab, have CVs well below the SBRM standard. See Table 3 for the expected achieved CV for species groups.
New fleet (Row New)		15	15 sea days were allocated to the Mid-Atlantic inshore crab trawl fleet to monitor sea turtle bycatch using sea days funded by Atlantic Coast Observers funds.

Fishery	Initial Sea Day Allocation	Revised Sea Day Allocation	Comments/Rationale
Industry-Funded Fleets			
Rows 9, 10, 12, 27, 28, 29, 30, 33, and 34	3,254	3,354	The 100 day increase is due to the differences between the January 14th and the March 28th compensation rate analyses. These differences are due to 137 versus 129 observer set-aside DAS, refinements in the LPUE analysis for limited access and general category vessels, and anticipated LPUE and price information based on expectations for 2011 fishing year. Coverage is expected to meet the SBRM performance standard for all species groups except sea turtles. The SBRM performance standard in Rows 10 and 12 is overestimated using pilot coverage and did not factor in the number of active vessels in these fleets.

Table 3. The expected coefficient of variation (CV) achieved for the **REVISED** prioritized sea days, by species group and fleet based on July 2008 to June 2009 data. Red font indicates CVs less than or equal to 30%; '*' denotes species groups that have been filtered out through the importance filter.

Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2011 SBRM Standard Sea Days	2011 SBRM Prioritized Sea Days	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	TURS	Pilot
1	Longline	OPEN	all	MA	all	79	44																P
2	Longline	OPEN	all	NE	all	184	237	*	*	*	*	*	*	*	*	*	*	**0.257**	*	*	*	*	
3	Hand Line	OPEN	all	MA	all	74	0																P
4	Hand Line	OPEN	all	NE	all	49	419	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
5	Otter Trawl	OPEN	all	MA	sm	1,449	709	*	*	*	*	*	0.349	*	*	**0.300**	**0.241**	**0.262**	**0.268**	*	*	0.451	
6	Otter Trawl	OPEN	all	MA	lg	2,835	820	*	*	*	*	*	*	**0.114**	**0.128**	*	**0.100**	**0.119**	**0.114**	*	*	0.593	
7	Otter Trawl	OPEN	all	NE	sm	4,274	529	*	*	*	*	*	0.337	*	*	0.365	0.348	**0.297**	**0.300**	*	*	1.290	
8	Otter Trawl	OPEN	all	NE	lg	5,183	4,127	*	*	*	0.352	*	*	**0.054**	**0.041**	**0.087**	**0.044**	**0.047**	**0.074**	*	*	*	
9 +	Scallop Trawl	AA	GEN	MA	all	12	32																P
10 +	Scallop Trawl	AA	LIM	MA	all	88	7																P
11	Scallop Trawl	OPEN	GEN	MA	all	29	0																P
12	Scallop Trawl	OPEN	LIM	MA	all	95	10																P
13 +	Otter Trawl, Ruhle	OPEN	all	NE	lg	22	11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
14 +	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	21	15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
15	Shrimp Trawl	OPEN	all	MA	all	74	0																P
16	Shrimp Trawl	OPEN	all	NE	all	18	18	*	*	*	*	*	*	*	*	**0.300**	*	*	*	*	*	*	
17 +	Floating Trap	OPEN	all	MA	all	3	0																P
18 +	Floating Trap	OPEN	all	NE	all	9	0																P
19	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	39	0																P*
20	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	755	206	*	*	*	*	*	*	*	*	*	*	**0.153**	*	*	*	0.691	
21	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	86	324	*	*	*	*	*	*	**0.147**	*	*	*	*	*	*	*	*	
22	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	12	0																P
23	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	147	1,822	*	*	*	*	*	*	*	**0.065**	*	*	**0.079**	*	*	*	*	
24	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	256	611	*	*	*	*	*	*	**0.191**	*	*	**0.099**	**0.165**	*	*	*	*	
25	Purse Seine	OPEN	all	MA	all	9	43																P
26	Purse Seine	OPEN	all	NE	all	23	112	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
27	Scallop Dredge	AA	GEN	MA	all	29	48																P
28	Scallop Dredge	AA	GEN	NE	all	17	50																P
29	Scallop Dredge	AA	LIM	MA	all	178	739	*	*	*	*	*	*	**0.108**	*	*	**0.131**	*	*	*	*	*	
30	Scallop Dredge	AA	LIM	NE	all	170	765	*	*	*	*	*	*	**0.103**	*	*	*	*	*	*	*	*	
31	Scallop Dredge	OPEN	GEN	MA	all	43	43	*	*	*	*	*	*	*	*	*	**0.300**	*	*	*	*	*	
32	Scallop Dredge	OPEN	GEN	NE	all	68	68	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
33	Scallop Dredge	OPEN	LIM	MA	all	1,417	1,045	*	*	*	*	*	*	**0.118**	**0.290**	*	**0.136**	*	*	*	*	0.360	
34	Scallop Dredge	OPEN	LIM	NE	all	658	658	*	*	*	*	**0.236**	*	**0.138**	**0.195**	*	**0.178**	*	**0.300**	*	*	*	
35	Mid-water Paired & Single Trawl	OPEN	all	MA	all	30	30																P
36	Mid-water Paired & Single Trawl	OPEN	all	NE	all	190	235	*	*	*	*	*	*	*	*	*	*	**0.265**	*	*	*	*	
37	Pots and Traps, Fish	OPEN	all	MA	all	24	0																P
38	Pots and Traps, Fish	OPEN	all	NE	all	12	85																P
39 +	Pots and Traps, Conch	OPEN	all	MA	all	20	0																P
40 +	Pots and Traps, Conch	OPEN	all	NE	all	15	0																P
41 +	Pots and Traps, Hagfish	OPEN	all	MA	all	3	0																P
42 +	Pots and Traps, Hagfish	OPEN	all	NE	all	60	0																
43 +	Pots and Traps, Shrimp	OPEN	all	NE	all	8	0																P
44	Pots and Traps, Lobster	OPEN	all	MA	all	66	0																P
45	Pots and Traps, Lobster	OPEN	all	NE	all	452	0																P
46	Pots and Traps, Crab	OPEN	all	MA	all	12	0																P
47	Pots and Traps, Crab	OPEN	all	NE	all	53	0																P
48 +	Beam Trawl	OPEN	all	MA	all	29	0																P
49 +	Beam Trawl	OPEN	all	NE	all	14	0																P
50 +	Dredge, Other	OPEN	all	MA	all	21	0																P
51	Ocean Quahog/Surf Clam Dredge	OPEN	all	MA	all	61	0																P
52	Ocean Quahog/Surf Clam Dredge	OPEN	all	NE	all	32	0																P
New	Crab Trawl	OPEN	all	MA	all		15																
	SAP/B day/US-CAN (now included in Row 8)																						
	Herring CAI coverage						127																
	Discovery Days						0																
				Total Sea Days		**19,507**	**14,004**																

P = pilot coverage; P* = pilot coverage for fish only.

Table 4. The number of sea days needed to achieve a 30% CV based on the variance of the total composite discard for each the 15 SBRM species groups, the number of pilot sea days, and 2011 SBRM standard sea days (the maximum number of sea days needed for each fleet) based on July 2009 through June 2010 data. Red font indicates basis for fleet sea days; species group abbreviation are given in Table 1.
(The table is taken directly from 2011 SBRM Sea Day and Prioritization document – no changes).

Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	TURS	Pilot days	2011 SBRM Standard Sea Days	Pilot
1	Longline	OPEN	all	MA	all	0	0	0	0	0	0	79	79	0	79	79	0	0	79	79	79	79	P
2	Longline	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	28	184	
3	Hand Line	OPEN	all	MA	all	0	0	0	0	0	0	0	74	0	0	0	0	0	0	74	74	74	P
4	Hand Line	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	49	
5	Otter Trawl	OPEN	all	MA	sm	0	0	0	0	0	937	0	0	709	467	553	577	0	0	1,449	163	1,449	
6	Otter Trawl	OPEN	all	MA	lg	0	0	0	0	0	0	128	161	0	96	139	128	0	0	2,835	229	2,835	
7	Otter Trawl	OPEN	all	NE	sm	0	0	0	0	0	655	0	0	762	697	520	529	0	0	4,274	167	4,274	
8	Otter Trawl	OPEN	all	NE	lg	0	0	0	5,183	0	0	154	97	433	105	122	294	0	0	0	496	5,183	
9 +	Scallop Trawl	AA	GEN	MA	all	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	P
10 +	Scallop Trawl	AA	LIM	MA	all	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	P
11	Scallop Trawl	OPEN	GEN	MA	all	29	0	0	0	29	29	29	29	29	29	29	29	0	0	29	29	29	P
12	Scallop Trawl	OPEN	LIM	MA	all	95	0	0	0	95	95	95	95	95	95	95	95	0	0	95	95	95	P
13 +	Otter Trawl, Ruhle	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22	
14 +	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	21	
15	Shrimp Trawl	OPEN	all	MA	all	0	74	0	0	0	74	74	74	74	74	0	74	0	0	74	74	74	P
16	Shrimp Trawl	OPEN	all	NE	all	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	56	18	
17 +	Floating Trap	OPEN	all	MA	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
18 +	Floating Trap	OPEN	all	NE	all	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	P
19	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	39	39	0	0	0	39	39	39	0	39	39	39	0	0	0	39	39	P*
20	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	0	59	0	0	0	755	33	755	
21	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	52	86	
22	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	12	12	0	0	0	12	12	12	12	12	12	12	0	0	12	12	12	P
23	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	0	0	0	0	0	0	0	94	0	0	147	0	0	0	0	213	147	
24	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	0	0	0	0	0	0	256	0	0	77	194	0	0	0	0	98	256	
25	Purse Seine	OPEN	all	MA	all	9	9	0	0	0	9	0	9	9	9	9	9	0	0	9	9	9	P
26	Purse Seine	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	23	
27	Scallop Dredge	AA	GEN	MA	all	0	0	0	0	29	0	29	29	29	29	29	29	0	0	29	29	29	P
28	Scallop Dredge	AA	GEN	NE	all	0	0	0	17	17	0	17	17	17	17	17	17	0	0	17	17	17	P
29	Scallop Dredge	AA	LIM	MA	all	0	0	0	0	0	0	124	0	0	178	0	0	0	0	0	90	178	
30	Scallop Dredge	AA	LIM	NE	all	0	0	0	0	0	0	170	0	0	0	0	0	0	0	0	122	170	
31	Scallop Dredge	OPEN	GEN	MA	all	0	0	0	0	0	0	0	0	0	43	0	0	0	0	0	86	43	
32	Scallop Dredge	OPEN	GEN	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68	68	
33	Scallop Dredge	OPEN	LIM	MA	all	0	0	0	0	0	0	175	983	0	230	0	0	0	0	1,417	208	1,417	
34	Scallop Dredge	OPEN	LIM	NE	all	0	0	0	0	415	0	146	285	0	239	0	658	0	0	0	240	658	
35	Mid-water Paired & Single Trawl	OPEN	all	MA	all	30	30	0	0	0	30	30	30	30	0	30	0	0	0	30	30	30	P
36	Mid-water Paired & Single Trawl	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	190	0	0	0	0	46	190	
37	Pots and Traps, Fish	OPEN	all	MA	all	0	24	0	24	0	0	0	24	24	24	0	24	0	24	24	24	24	P
38	Pots and Traps, Fish	OPEN	all	NE	all	0	12	0	12	0	0	0	12	12	12	0	12	0	12	12	12	12	P
39 +	Pots and Traps, Conch	OPEN	all	MA	all	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	P
40 +	Pots and Traps, Conch	OPEN	all	NE	all	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	P
41 +	Pots and Traps, Hagfish	OPEN	all	MA	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
42 +	Pots and Traps, Hagfish	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	
43 +	Pots and Traps, Shrimp	OPEN	all	NE	all	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	P
44	Pots and Traps, Lobster	OPEN	all	MA	all	0	0	0	66	0	0	0	66	0	0	0	0	0	0	66	66	66	P
45	Pots and Traps, Lobster	OPEN	all	NE	all	0	0	0	452	0	0	0	452	0	0	0	0	0	0	0	452	452	P
46	Pots and Traps, Crab	OPEN	all	MA	all	0	0	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	P
47	Pots and Traps, Crab	OPEN	all	NE	all	0	0	0	53	0	0	0	0	0	0	0	0	0	0	53	53	53	P
48 +	Beam Trawl	OPEN	all	MA	all	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	P
49 +	Beam Trawl	OPEN	all	NE	all	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	P
50 +	Dredge, Other	OPEN	all	MA	all	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	P
51	Ocean Quahog/Surf Clam Dredge	OPEN	all	MA	all	0	0	0	0	61	0	61	0	0	0	0	0	61	0	61	61	61	P
52	Ocean Quahog/Surf Clam Dredge	OPEN	all	NE	all	0	0	0	0	32	0	32	0	0	0	0	0	32	0	32	32	32	P
					Total	**436**	**422**	**222**	**6,041**	**900**	**2,102**	**1,958**	**2,883**	**2,475**	**2,773**	**2,669**	**2,748**	**315**	**337**	**11,660**	**3,991**	**19,507**	

P = pilot coverage; P* = pilot coverage for fish only.