

A standard methodology to apportion sector catch to stock area

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Justification

If approved, up to 19 sectors will begin operations on May 1, 2010. The total groundfish catch (landings and discards) of each sector must be closely monitored to ensure that sectors do not exceed any of their individual annual catch entitlements (ACE). In order to monitor both groundfish landings and discards, information is needed on the total landed amount of all species caught by area and gear type (otter trawl, gillnet or longline). There are a variety of sources of this information, each with varying levels of certainty; ultimately, the primary source of the total landed amount will come from the dealer weighout data which will be apportioned to statistical area and gear type using the vessel trip report (VTR) data. Discard ratios will be applied to the dealer-based K_{all} (total retained catch of all species from the fishing trip) for the appropriate gear and stock; this requires assigning a gear and area to dealer-reported landings. While all of the data sources that are required to monitor total catch are expected to be available on a weekly basis by May 1, 2010, past experience has shown that incomplete compliance and inadequate data quality will require that alternate data sources and methods be employed to estimate total sector catch by stock.

For example: Under Amendment 16, sector managers have no authority to require seafood dealers to submit their reports weekly. Non-compliance on the part of dealers will require sector managers (and NMFS) to monitor ACE despite missing information. In the absence of dealer data, a standard method needs to be employed to estimate the stock removals on a temporary basis until the dealer data become available. For example, when dealer data are unavailable and VTR data are available, the VTR reported landings by area will be used after applying a hail weight conversion factor. These will be used as a surrogate until the dealer landings for that trip became available.

There are a variety of possible scenarios that may be encountered and a comprehensive monitoring methodology that accounts for all possible solutions is needed. This document (in combination with the companion document `sector_catch_monitoring_matrix_draft_091015.xls`) outlines a methodology to account for the all of the varying levels of data completeness expected under groundfish sectors and provides contingencies for when data are unavailable and incentives to facilitate industry compliance.

Overview of the methodology

There are three broad types of fishing trips that will occur when monitoring sector catch: trips occurring in a single VMS reporting area (type S), trips occurring in multiple VMS reporting areas (type M); and, trips where it is unknown whether they occurred in a single

reporting area or multiple reporting areas (type U). These three broad trip types are denoted in the first column on the attached spreadsheet. For the 'S' and 'M' trip type there are several possible tiers of information availability dependent on reporting compliance, completeness and timeliness. Under ideal circumstances, landings and discards will be calculated at tier 1 (both dealer and VTR data are available). Tier levels greater than 1 are indicative of some level of non-compliance either on the part of the dealer or the vessel (i.e., data are unavailable for the reporting week). In general, the higher the tier number, the greater the degree of uncertainty there will be in accounting for stock landings and discards. For each tier, a summary of data sources and information availability are provided and a method is outlined to use what information is available to apportion landings to stock area and calculate discards (when trip is not observed).

It is the intent that both NMFS and sector managers would apply this methodology and that weekly sector reports would report landings and discards broken down by trip type and tier (e.g., S1, M4, U1). This would allow NMFS the capacity to gauge the level of certainty associated with the overall sector ACE accounting. As missing information becomes available in subsequent weeks, landings and discards would be updated and catch accounted for at higher tiers (greater than 1) in previous weeks would be expected to move to lower tiers. Large amounts of catch accounted for at higher tier levels would be indicative of a compliance issue warranting closer attention.

Information availability scenarios

Each of the cells shaded grey on the sector_catch_monitoring_matrix_draft_091015.xls spreadsheet corresponds to a scenario listed below. This reflects a consensus opinion reached between the Northeast Regional Office and the Northeast Fisheries Science Center on August 20, 2009. Because accounting for catch at trip type/tiers other than S1 or M1 introduces uncertainty, sector catch monitoring methodology uses a precautionary approach to account for the uncertainty, in addition, it provides an incentive to submit information in a timely manner and comply with existing federal regulations.

This methodology assumes that the VMS Activity Declaration will contain information on the gear type fished and the VMS reporting area fished. Additionally, the methodology assumes that the VMS catch reports filed at the end of the trip will indicate the total groundfish catch by species and VMS reporting area as well as the total catch by VMS reporting area.

In this plan, Northeast Fisheries Observer Program observer data, At-Sea Monitor (ASM) data and Dockside-Monitor (DSM) data are considered ancillary and are not used to provide missing information on landed catch. These data will not be available for all trips so they should not be relied on for the purposes of catch apportionment.

The amount of groundfish landings retained for home consumption can only be determined from VTR data. Sectors will be responsible for accounting for these

removals. DSM data could be used to monitor a vessel's and sector compliance with regards to reporting home consumption landings.

Landings estimation (Column 0 on sector_catch_monitoring_matrix_draft_091015.xls spreadsheet, scenarios are cross referenced using the notation L1, L2, etc...'L' indicates it is a landings scenario)

1) Have VTR data, but no dealer data (Tiers S2, M2)

- **Method:** Use the VTR landings by statistical area until dealer data become available. Apply hail weight correction to account for anticipated underestimation of VTR hail weights relative to dealer weights.
 - **Advantages/disadvantages:** Attempts to correct for the underestimation of VTR hail weights, though this method could add additional uncertainty when the true amount of underestimation is unknown.

2) Have groundfish landings, but no area information (Tiers U1, M4)

- **Method:** Apply landings to all stocks for which a sector has ACE.
 - **Advantages/disadvantages:** This provides a severe penalty for non-compliance, potentially double/triple counting landings of Atlantic cod, haddock, yellowtail and winter flounder if a sector has ACE in more than one stock for these species.

3) No groundfish landings, but area is known (Tier S4)

- **Method:** Apply the *maximum* trip-level groundfish landings by that vessel for all groundfish stocks within that reporting area in the given fishing year. If no landings by that vessel to date apply the *maximum* trip-level groundfish landings across all sector vessels for that reporting area.
 - **Advantages/disadvantages:** The uncertainty affects all stocks. There is an ACE penalty for non-compliance if the trip's groundfish landings are less than the maximum to date.

4) No groundfish landings or area information (Tier M6)

- **Method:** Apply the *maximum* trip-level groundfish landings by that vessel for all groundfish stocks for which the sector has ACE. If no landings by that vessel to date apply the *maximum* trip-level landings across all sector vessels for which the sector has ACE.
 - **Advantages/disadvantages:** The uncertainty affects all stocks, though uncertainty greater for Atlantic cod, haddock, yellowtail flounder and winter flounder. There is an ACE penalty for non-compliance if the trip's groundfish landings are less than the maximum to date.

5) **No trip information; vessel permit, quarter and port of landing are known (Tiers S5, M7)**

- **Method:** Apply the *maximum* trip-level groundfish landings by that vessel for all groundfish stocks for which the sector has ACE. If no landings by that vessel to date apply the *maximum* trip-level landings across all sector vessels for which the sector has ACE.
 - **Advantages/disadvantages:** The uncertainty affects all stocks, though uncertainty greater for Atlantic cod, haddock, yellowtail flounder and winter flounder. There is an ACE penalty for non-compliance if the trip's groundfish landings are less than the maximum to date.

Discards (Column P on sector_catch_monitoring_matrix_draft_091015.xls spreadsheet, scenarios are cross referenced using the notation D1, D2, etc... 'D' indicates it is a discard scenario) – scenarios are only relevant when discard rates must be applied.

1) **Have VTR data, but no dealer data (Tiers S2, M2)**

- **Method:** Expand rate using the VTR-derived K_{all} by stock area and gear. Apply hail weight correction to account for anticipated underestimation of VTR K_{all} hail weights relative to dealer weights.
 - **Advantages/disadvantages:** Attempts to correct for the underestimation of VTR hail weights, though this method could add additional uncertainty when the true amount of underestimation is unknown.

2) **Have K_{all} , but no area or gear information (Tier U1)**

- **Method:** *Use the most frequently used gear type for that vessel within the fishing year to determine gear type* and then multiply K_{all} by the stock/fleet-specific discard rates for all stocks for which the sector has ACE. If no information to date on gear type usage by that vessel, use the gear type most frequently used by all sector vessels (**note: in the case of equal gear use by either vessel or sector, use the gear type with the highest discard rate*).
 - **Advantages/disadvantages:** A penalty for non-compliance could occur if a sector was charged for ACE when the trip did not occur in that stock area (this would work in reverse as well with the sector not being charged the full ACE debit for a stock area when it should have been). This only applies to Atlantic cod, haddock, yellowtail flounder and winter flounder.

3) **No K_{all} , area and gear are known (Tier S4)**

- **Method:** Use the *maximum* trip-level landings to estimate K_{all} for that vessel/gear/area combination in the fishing year to calculate groundfish discards for all stocks corresponding to the area fished and for which the sector has ACE. If no trip landings (dealer) for that vessel/gear/area combination in the fishing

year, use the *maximum* trip-level landings from all sector vessels having fished that gear type and fished in that area.

- **Advantages/disadvantages:** This would underestimate total discards if trip landings exceeded observed maximum to date.

4) Have K-all by gear, but not by area (Tier M4)

- **Method:** Use the *maximum* trip-level landings for that vessel/gear combination in the fishing year to estimate K_{all} and calculate groundfish discards for all stocks for which the sector has ACE. If no trip landings (dealer) for that vessel/gear combination in the fishing year, use the *maximum* trip-level landings from all sector vessels having fished that gear type.
 - **Advantages/disadvantages:** This would underestimate total discards if trip landings exceeded observed maximum to date. A penalty for non-compliance would occur if trip a sector was charged for ACE when the trip did not occur in that stock area. This only applies to Atlantic cod, haddock, yellowtail flounder and winter flounder.

5) Have VMS area, gear declarations and VMS catch reports, but no dealer data (Tier M5)

- **Method:** Expand rate using the VMS-reported K-all by stock area and gear. Apply hail weight correction to account for anticipated underestimation of VMS K_{all} hail weights relative to dealer weights.
 - **Advantages/disadvantages:** Attempts to correct for the underestimation of VMS hail weights, though this method could add additional uncertainty when the true amount of underestimation is unknown.

6) No K-all or area, but gear is known (Tier M6)

- **Method:** Use the *maximum* trip-level landings by that vessel/gear combination for all areas fished in the given fishing year to estimate K_{all} . If no landings by that vessel/gear combination to date apply the *maximum* trip-level landings across all sector vessels fishing that gear. Calculate discards by multiplying the estimated K_{all} by the fleet-specific discard rate for all stocks for which the sector has ACE.
 - **Advantages/disadvantages:** This would underestimate total discards if trip landings exceeded observed average to date. A penalty for non-compliance could occur if trip a sector was charged for ACE when the trip did not occur in that stock area (this would work in reverse as well with the sector not being charged the full ACE debit for a stock area when it should have been). This only applies to Atlantic cod, haddock, yellowtail flounder and winter flounder.

7) **No trip information; vessel permit, quarter and port of landing are known (Tiers S5, M7)**

- **Method:** Use the *maximum* trip-level landings by that vessel for all areas fished in the given fishing year to estimate K_{all} . If no landings by that vessel to date apply the *maximum* trip-level groundfish landings across all vessels. Apply the stock/fleet-specific discard rates to K_{all} for all stock for which a sector has ACE.
 - **Advantages/disadvantages:** The uncertainty affects all stocks, though uncertainty greater for Atlantic cod, haddock, yellowtail flounder and winter flounder. There is an ACE penalty for non-compliance if the trip's groundfish landings are less than the maximum to date. Additionally, a penalty for non-compliance could occur if trip a sector was charged for ACE when the trip did not occur in that stock area (this would work in reverse as well with the sector not being charged the full ACE debit for a stock area when it should have been). This only applies to Atlantic cod, haddock, yellowtail flounder and winter flounder.

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