

## Strawman Observer Coverage Options – Take 2

### 1. Option 1 - No Action

From Amendment 16: “For observer or at-sea monitor coverage, minimum coverage levels must meet the coefficient of variation in the Standardized Bycatch Reporting Methodology. The required levels of coverage will be set by NMFS based on information provided by the Northeast Fisheries Science Center (NEFSC) and may consider factors other than the SBRM CV standard when determining appropriate levels. Any electronic monitoring equipment or systems used to provide at-sea monitoring will be subject to the approval of NMFS through review and approval of the sector operations plan. Less than 100% electronic monitoring and at-sea observation will be required.”

### 2. Option 2 - Clarification of Coverage Standard

Adequate coverage (combined NEFOP, ASM and EM) is required to meet the need for both the precision and accuracy of discard estimates.

For observer or at-sea monitor coverage, minimum coverage levels must meet the coefficient of variation in the Standardized Bycatch Reporting Methodology. The CV standard must be met at the level specified below:

Sub-Option A: For allocated groundfish stocks caught by sectors, the CV standard must be met for each stock at the overall stock level.

Sub-Option B: For allocated groundfish stocks caught by sectors, the CV standard must be met for each stock and each sector.

The minimum coverage level based on CV is only appropriate for sector monitoring purposes if there is no evidence that behavior on observed and unobserved trips is different. If there is evidence that behavior is different, then a higher coverage level may be required to ensure the accuracy of discard estimates. The required levels of coverage will be set by NMFS based on information provided by the Northeast Fisheries Science Center (NEFSC) and may consider factors other than the SBRM CV standard when determining appropriate levels. Any electronic monitoring equipment or systems used to provide at-sea monitoring will be subject to the approval of NMFS through review and approval of the sector operations plan. Less than 100% electronic monitoring and at-sea observation will be required.

*Rationale:* While Amendment 16 specified that, at a minimum, ASM coverage must be sufficient to meet the CV standard specified by the SBRM, it was not clear on what level of stratification should be used for the standard. This measure would clarify that issue. Sub-Option A would require that the standard be met at the overall stock level (i.e. GOM cod caught by all sectors), Sub-Option B would require that the standard be met at each stock and each sector level (i.e. GOM cod caught by each specific sector). Sub-Option B would lead to higher coverage levels than Sub-Option A. Neither option would require that the CV standard be met for each stratum within a sector.

### **3. Option 3 – ACE Buffer for Possible Monitoring Effects (NOT RECOMMENDED FOR INCLUSION IN FW 48)**

It is difficult to evaluate the overall accuracy of discard estimates because it hinges on what is occurring on unobserved trips. Appropriate sampling techniques can minimize the errors of the estimates as long as the sampled trips are representative of the fishery as a whole. If there are monitoring effects – either due to non-random trip selection or changes in behavior when observers are on board – then the discard estimates may be biased.

Analyses of several metrics that can be measured on both observed and unobserved trips suggest that fishermen behave differently on unobserved trips than they do on observed trips. In the data analyzed to date, the differences are relatively small at the median (mean?). This does not, unfortunately, give any indication on whether discard rates are different on unobserved trips. Bias in discard estimates may also occur if the observed trips are inadvertently selected in a non-random manner.

In the absence of an ability to quantify the magnitude of the bias in discard estimates (if any), an approach is proposed that is designed to minimize the possibility that a sector exceeds its ACE for a stock when nominal catch (both landings and discards) indicate it is below the allocated ACE. This is done by limiting the maximum amount of ACE of a stock that a sector can catch based on the level of observer coverage that the sector implements.

The standard considers three variable factors:

- The ratio of nominal catch to total ACE available for a stock;
- The discards of a stock compared to the landings of that stock, defined as a rate. This is based on the previous year's values for the sector. Note that this is not the same as the discards of the stock to the kept(all) ratio that is used for estimating discards.
- The sector and stock specific CV. This will be assumed to be the previous year's value for the sector unless a sector demonstrates that a different value will be achieved (such as by increasing observer coverage rates over the previous year).

In addition, one fixed variable will be considered. This variable assumes that the discard rates on unobserved trips are 3 times the rates on observed trips. This assumption can be modified by the NERO if data are available that indicate a different value is appropriate. Such a change will be adopted through procedures consistent with the APA. This value is identified as the assumed bias in discard rates on unobserved trips.

Using this approach, the maximum nominal catch for a stock can be identified, termed ACE<sub>max</sub>. ACE<sub>factor</sub> is the maximum percentage of available ACE that can be caught. Multiplying ACE<sub>max</sub> times the available ACE (initial allocation, carry-over, and net transfers) results in the maximum poundage that can be caught. NMFS will calculate this value for each stock for each sector prior to August 1. Each sector can then choose to accept this value or can modify its planned observer coverage level in order to increase

its ACEmax. The sector's decision will be specified in its Operations Plan. Once the Operations Plan is approved, the sector's decision will be binding for that fishing year.

The ACE factor for each stock allocated to a sector will be calculated as follows:

$$ACEfactor = 1/\{(B * D_{py}) + (B * D_{py} * 1.96 * CV_{py}) + L_{py}\}$$

Where:

$$D_{py} = \text{Previous year's discards as percent of nominal catch of the specific stock}$$

$$L_{py} = \text{Previous year's landings as a percent of nominal catch of a specific stock}$$

$$CV_{py} = \text{Previous year's sector – specific CV for the stock}$$

$$O_k = \text{Observed kept catch of all species as a percent of total kept catch of all species}$$

$$B_a = \text{Assumed bias in discard rate on unobserved trips}$$

$$B = \text{Bias Factor} = \{(1 - O_k) * B_a\} + O_k$$

The maximum catch (landings and discards) that a sector is allowed to catch would be:

$$ACEmax = ACEfactor * ACEfinal$$

Note that ACEfinal includes the initial allocation, carry-over, and net transfers for the fishing year. The use of the fixed constant of 1.96 provides a high level of certainty that a sector does not exceed its ACEfinal when the nominal catch is less than the ACEfinal.

*Rationale:* This approach to ASM coverage levels explicitly accounts for the fact that there may be monitoring effects on unobserved trips that result in a bias in discard estimates. Sectors are limited in the percentage of ACE that can be harvested in order to make it unlikely that actual catches exceed the allocated catches. Over time, sectors can increase the percentage of ACE that can be harvested in several ways: by reducing discard rates or by decreasing the variability in discard estimates. In any given year, sectors can increase the amount of ACE that can be harvested by increasing coverage. This approach allows sectors to target observer coverage levels in the most cost efficient way for each individual sector.

#### **4. Option 4: Coverage Level Sufficient to Detect Monitoring Effects**

It is difficult to evaluate the overall accuracy of discard estimates because it hinges on what is occurring on unobserved trips. Appropriate sampling techniques can minimize the errors of the estimates as long as the sampled trips are representative of the fishery as a whole. If there are monitoring effects – either due to non-random trip selection or changes in behavior when observers are on board – then the discard estimates may be biased.

Analyses of several metrics that can be measured on both observed and unobserved trips suggest that fishermen behave differently on unobserved trips than they do on observed trips. In the data analyzed to date, the differences are relatively small at the median (mean?). This does not, unfortunately, give any indication on whether discard rates are different on unobserved trips.

Since it is not possible to determine the amount of bias in discard rates on unobserved trips, the level of observer coverage is based on the amount of coverage needed to detect monitoring effects in metrics that can be measured on both observed and unobserved trips. This value would be determined by NMFs and communicated to sectors using procedures consistent with the APA. Sectors would incorporate this coverage level into their sector operations plans.

For FY 2013, the coverage level would be XXX%.

*Rationale:* The ASM coverage level would be calculated and specified at the level so that that changes in monitoring effects can be detected. Should there be evidence of an increase in monitoring effects, the Council may address the increase uncertainty in discard estimates by adopting a new standard.