Methodology for River Herring and Shad Cap for the Atlantic Mackerel Fishery

This document summarizes the methodology for the river herring and shad (RH/S) cap on the Atlantic mackerel (mackerel) fishery that was implemented through Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) Fishery Management Plan (FMP). The RH/S cap is one of several measures implemented through Amendment 14 to quantify and reduce fishing mortality on RH/S in the Atlantic mackerel fishery. This methodology was developed by the Greater Atlantic Regional Fisheries Office (GARFO), and is based on existing catch caps currently being implemented in the region.

Background

The RH/S cap is intended to limit RH/S catch (landings and discards) on trips that land greater than or equal to 20,001 lb of mackerel. All RH/S catch on trips that land greater than or equal to 20,001 lb mackerel between January and December, are counted against the RH/S cap. The RH/S cap is an annual allocation, and is not divided by season or area.

With the RH/S cap, the directed mackerel fishery will close (possession limit reduced to 20,000 lb incidental limit) if one of two events happen. The directed fishery will close if either 95 percent of the RH/S cap is harvested, or if 95 percent of the mackerel quota has been harvested.

Data

In order to monitor the RH/S cap, GARFO staff relies on a number of sources of data. The data sources used to monitor the RH/S cap are summarized below, with particular attention to the timeframe over which the data becomes available for RH/S cap monitoring purposes.

Northeast Fisheries Observer Program Data. The Northeast Fishery Observer Program (NEFOP) collects and processes data and biological samples obtained during commercial fishing trips. RH/S catch estimates from observed fishing trips that land greater than or equal to 20,001 lb of mackerel will be used to extrapolate total RH/S catch for all trips that land greater than or equal to 20,001 lb of mackerel. Preliminary (partially audited) observer data is available to GARFO's Analysis and Program Support Division (APSD) for catch monitoring purposes within 7 days of the end of the observed fishing trip.

Federal Dealer Data. Federally permitted mackerel dealers are required to submit reports that document, among other things, the weight of each species purchased from vessels during a given reporting week by midnight of the first Tuesday following the end of a reporting week. Reports are submitted through the Standard Atlantic Fisheries Information System (SAFIS), and are available to APSD upon submission. Federal dealers are able to purchase mackerel from both federally permitted vessels and non-federally permitted vessels. Thus, information on all trips where greater than or equal to 20,001 lb of mackerel is sold to federally permitted dealers should

be available within 10 days of landing for RH/S cap monitoring, regardless of whether the vessel holds a federal mackerel permit.

Vessel Trip Report (VTR) Data. Federally permitted vessels are required to submit fishing vessel trip reports (VTRs) detailing the weights of each species kept and discarded. VTRs will be used as a substitute for dealer data in the cases where dealer reports are unavailable. Currently, MSB permit holders are only required to submit VTRs on a monthly basis (within 15 days after the end of the reporting month). However, vessels that hold Northeast multispecies permits, Atlantic herring permits, or Tier 3 mackerel permits are required to submit VTRs on a weekly basis (first Tuesday following the Sunday to Saturday reporting week). For the 2013 permit year, over 95% of limited access mackerel permit holders also held active multispecies permits or herring permits, thus a majority of vessels landing mackerel are expected to submit VTRs on a weekly basis. In addition, MSB Amendment 14 (February 24, 2014; 79 FR 10029) established a weekly VTR requirement for all MSB permit holders, so mackerel permit holders will be required to submit weekly VTRs after March 26, 2014.

Observer coverage

The Northeast Fisheries Observer Program (NEFOP) allocates observer sea days to monitor bycatch in commercial fisheries along the Atlantic coast, from Maine to North Carolina. Because of limitations in funding, observer sea days are allocated to fleet sectors with similar characteristics (*e.g.* gear type, region) rather than to fisheries defined by target species. The mackerel fishery is prosecuted using midwater trawl and small-mesh otter trawl gear, and thus, observer sea days are actually allocated quarterly to midwater trawls and small-mesh otter trawls (< 5.5 inch codend mesh) by region (i.e., Mid-Atlantic versus New England ports).

To facilitate the placement of observers on mackerel trips, Amendment 14 also established a trip notification requirement. As of March 26, 2014, vessels are required to notify NMFS at least 48 hours, but no more than 10 days, prior to embarking on a fishing trip in order to possess 20,001 lb or more of mackerel. NEFOP assigns observers to mackerel vessels following the trip notification based on availability.

River Herring and Shad catch estimation

Total RH/S catch in the mackerel fishery is estimated by using data from observed hauls on mackerel trips to extrapolate to unobserved mackerel trips. The rate of RH/S catch is estimated as the ratio of observed RH/S catch to the kept catch of all species on observed trips that land greater than or equal to 20,001 lb of mackerel. Total RH/S catch (in weight) is derived by multiplying the catch rate by total pounds of all kept species on all trips that land greater than or equal to 20,001 lb of mackerel. Many vessels with mackerel landings greater than or equal to 20,001 lb target a range of species, thus in order to account for RH/S encounters for these trips, the estimator is a ratio of RH/S catch to total weight of all kept species on observed hauls on trips that land greater than or equal to 20,001 lb of mackerel. Using all species retained as the denominator reduces bias in the ratio estimator, and is consistent with the peer-reviewed methodology that has been implemented to estimate catch and discards in other fisheries.

The formula for estimating total RH/S catch is:

$$\frac{Observed\frac{RH}{S}catch(landings\ and\ discards)}{Observed\ kept\ (all\ species)} \times Kept\ (all\ species, all\ mackerel\ trips)$$

$$= Total\ estimated\ RH/S\ catch$$

After total catch is extrapolated, the estimated weight of RH/S caught on observed trips is replaced with the actual observed RH/S catch from hauls on those trips. This means that actual RH/S catch values are used to replace estimated values whenever possible.

The RH/S catch rate is the year-to-date sum of all observed RH/S catch divided by the year-to-date sum of the observed weight of all kept species on trips that land greater than or equal to 20,001 lb of mackerel. The catch rate changes as more data from observed trips becomes available throughout the year, and as updated information on dealer-reported landings of all species on the relevant 20,001 lb mackerel trips (observed and unobserved) is added to the dealer database. It is important to note that the estimate of RH/S catch will change from week to week; the RH/S catch estimate may be lower or higher than the previous week as the estimated RH/S catch rate changes.

A transition method is applied at the beginning of the year when there are not enough in-season observed trips (i.e., fewer than five trips) to reliably estimate the RH/S catch rate. The transition method uses the previous year's catch rate as an assumed rate. For the start of the fishing year, the estimated RH/S catch rate from the previous year will be used as the assumed catch rate, with a transition to the in-season rate as data from observed trips 1 to 4 becomes available. Once data for observed trip number 5 becomes available the transition to the in-season data is complete. After the transition to in-season data is complete, the remainder of the fishing year will use the cumulative catch rate that is calculated using in-season data.

The formula for the transition rate is:

$$\left(\frac{0.7}{Trip\ Count}\right) * Assumed\ Rate + \left(1 - \left(\frac{0.7}{Trip\ Count}\right)\right) * In\_Season\ Rate$$

In this formula, trip count is 1 to 4. This transition rate is currently being used to estimate discard rates for the Northeast multispecies fishery.

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