

# Methodology for River Herring and Shad Caps in the Atlantic Herring Fishery

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This document summarizes the methodology for the river herring and shad (RH/S) caps in the Atlantic herring fishery implemented through Framework Adjustment 3 to the Atlantic Herring Fishery Management Plan (FMP). 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 caps are intended to limit RH/S catch (landings and discards) on trips that land greater than 6,600 lb of herring. Framework 3 established four area and gear specific catch caps: Gulf of Maine (GOM) Midwater Trawl, Cape Cod (CC) Midwater Trawl, Southern New England (SNE) Midwater Trawl, and SNE Bottom Trawl.

When 95 percent of the RH/S catch for a gear specific catch cap is projected to be reached in a Catch Cap Area, all vessels fishing with that gear type in the respective closure area will be subject to a reduced herring possession limit of 2,000 lb per trip, per calendar day, in or from that area for the remainder of the fishing year. Vessels using other gear types in the closure would not be subject to the 2,000 lb possession limit and could continue directed fishing for herring in those areas with other gear types.

## Data

The data sources used to monitor the RH/S caps are summarized below, with particular attention to the timeframe over which the data become 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 6,600 lb of herring are used to extrapolate total RH/S catch for all trips that land greater than 6,600 lb of herring. Preliminary (partially audited) observer data is available to GARFO's Analysis and Program Support Division (APSD) for catch monitoring purposes within seven days of the end of the observed fishing trip.

*Federal Dealer Data.* Federally permitted herring dealers are required to submit reports that document, among other things, the weight of each species purchased from vessels during a reporting week (Sunday-Saturday) by midnight of the first Tuesday following the end of that reporting week. Reports are submitted through the Standard Atlantic Fisheries Information System (SAFIS), and should be available to APSD within ten days of landing. Federal dealers are able to purchase herring from both federally permitted vessels and non-federally permitted vessels.

*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 are primarily used to determine catch location and gear type, but are also used as a substitute for dealer data when dealer

reports are unavailable. Federal Atlantic herring permit holders are required to submit VTRs on a weekly basis (first Tuesday following the Sunday-Saturday reporting week).

### **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.

Observer sea days are allocated to fleet sectors with similar characteristics (e.g. gear type, region) rather than to fisheries defined by target species. Specific to the gear types covered by the RH/S caps, observer sea days are 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).

### **River Herring and Shad catch estimation**

RH/S catch is estimated by using data from observed hauls to extrapolate unobserved herring trips. RH/S catch rates are calculated for each area and gear specific catch cap. The rate of RH/S catch is estimated as the ratio of observed RH/S catch to the observed kept catch of all species on trips that land greater than 6,600 lb of herring. For all trips that land greater than 6,600 lb of herring, RH/S catch (in weight) is derived by multiplying the RH/S catch rate by the total pounds of all kept species caught by a specific gear type from a Catch Cap Area. Using all species kept as the denominator accounts for species other than herring that are kept, and reduces bias in the ratio estimator.

The formula for estimating RH/S catch is:

$$\frac{\text{Observed RH/S catch (landings and discards)}}{\text{Observed Kept (all species)}} \times \text{Kept (all species)} \\ = \text{Estimated RH/S catch}$$

After RH/S 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 for a specific gear type and Catch Cap Area 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 caught by that gear type in the Catch Cap Area on trips that land greater than 6,600 lb of herring. The catch rate changes as more data from observed trips become available throughout the year. 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 and/or landings data get updated.

A transition method is applied when there are not enough observed trips from the current fishing year (in-season) to reliably estimate the RH/S catch rate for a specific gear type in a Catch Cap Area. If fewer than five trips are available from the current fishing year, the estimated RH/S catch rate from the prior fishing year will be used as the assumed catch rate, with a transition to the in-season rate as data from observed trips become available. Once five observed trips are available, transition to the in-season data is complete and the in-season data are used for the remainder of the year.

The formula for the transition rate is:

$$\left(\frac{0.7}{\text{Trip Count}}\right) \times \text{Assumed Rate} + \left(1 - \left(\frac{0.7}{\text{Trip Count}}\right)\right) \times \text{In Season Rate}$$

In this formula, trip count is one to four. This transition rate is currently being used to estimate discard rates for the Northeast multispecies fishery and Atlantic mackerel fishery.