



Atlantic States Marine Fisheries Commission

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Summer Flounder, Scup, Black Sea Bass Technical Committee Meeting Summary

Conference Call
October 25, 2017

Technical Committee Members: Brandon Muffley (MAFMC), Greg Wojcik (CT), John Maniscalco (NY), Kiley Dancy (MAFMC), Mark Terceiro (NOAA), Peter Clarke (NJ), Rich Wong (DE), Steve Doctor (MD), Emily Gilbert (NOAA), T.D. VanMiddlesworth (NC), Tiffany Vidal (MA), Jason McNamee (RI), Joe Cimino (VA)

ASMFC Staff: Kirby Rootes-Murdy, Caitlin Starks, Jeff Kipp

Invited Speaker: John Foster (NOAA)

The Summer Flounder, Scup, Black Sea Bass Technical Committee (TC) met via conference call to discuss the recreational harvest data collection and estimation process through the Marine Recreational Information Program (MRIP) with John Foster, a lead statistician at NOAA Fisheries. The TC requested a meeting with John Foster in order to gain a better understanding of recreation harvest estimates and how they are derived.

John Foster presented the TC with an explanation of the MRIP sampling design and how raw data are transformed into final recreational harvest estimates. John noted that the details of this process will be published in a forthcoming technical document that will describe design and estimation procedures for all surveys administered by the NMFS Office of Science and Technology (S&T). The discussion followed five questions that the TC had prepared:

- 1) How is the weighting factor generated for an intercept? (i.e. what variables affect the 'weighting'? How is it calculated? Does it change throughout the preliminary harvest estimate generating through to the final estimate?)**

Sample weights are applied to intercept survey data in several stages. The first stage is the Base APAIS sample weight, which reflects primary stage weighting of a site (or site cluster), time window, and date. Sampling units are selected from a list of combinations of active sites, days of the month, and time intervals, each of which has a known probability of selection. Categorical estimates of fishing activity are assigned by state personnel (using MRIP's Fishing Site Register) for each site or site cluster, with higher fishing pressure sites having a greater probability of selection. The inverse of these inclusion probabilities then becomes the APAIS

sampling weight. Thus, the APAIS sample weight reflects fishing activity in a reciprocal proportion as follows: high fishing activity = high pressure = high chance of selection = lower APAIS sample weight (per sample). Site pressures are specific to a site/mode/time interval/day of week/month.

Secondary stage weighting reflects the proportion of the 6 hour time interval spent sampling at a site. A full 6 hours gets a weight of 1, while 4/6 hours would get a weight equal to the reciprocal (1.5). The angler fraction is weighting based upon the ratio of number of anglers sampled to total number seen, again taking the reciprocal value. The Final Sample Weight equals the Base APAIS weight (primary stage) x Time correction (secondary weighting) x Angler fraction weight (third stage).

The final sample weight is used to calculate catch rates, coverage adjustments for non-state residents and non-coastal county residents and area-fished proportions. It is also the basis for wp_int (or wp_catch) but these full intercept weights also reflect the MRIP effort survey. Preliminary intercept weights previously did not include For-Hire VTR effort data which lead to large differences between preliminary and final estimates; that changed in 2016 with some for-hire data being incorporated into preliminary estimates and that continues today.

2) Can raw data be accessed from the website through a data request? If not, can it be posted to the website? Do we need to email a specific individual at MRIP to obtain this information? If so how specific does the request need to be to get raw data?

Raw survey data can be accessed either through a custom data request or through the website. The telephone survey data until 2003 can be downloaded from the website. Data from 2004 and on is in the public use format. The preferred method of retrieving raw data would be through a custom data request, though the data is not in an easily accessible format; the metadata and data dictionary could be used to navigate the data. A custom request would also be preferred to separate all the components of the wp_int including the base weight, the time interval weight, the angler fraction, and the effort survey.

3) How are raw response data used to create final harvest estimates (e.g., expansion factors), step by step?

Recreational fishing effort is currently estimated through the Coastal Household Telephone Survey (CHTS; which will be transitioning to the fishing effort survey, or FES, based upon mailings instead of calling landlines) and the For Hire Survey. The sampling frames for these surveys are coastal county households, and For-Hire vessels (available through a registry), respectively. They both use random selection in a stratified random sampling design. The telephone survey strata include geographic region (county) and wave. The For-Hire Survey is stratified by county of operation, region, inland, license holder (or not), head boat vs charter

boat, and vessel size. Additional stratification will be added in the mail-based fishing effort survey.

All units within a given strata have the same weight, equal to the number of frame units divided by the sample size. There is a non-response adjustment and a coverage correction that accounts for non-state residents, non-coastal county residents, and non-frame for-hire vessels.

The catch estimate is calculated by multiplying the weighted catch rate by the total effort estimate within a domain (defined by year, sub region, state, wave, mode and area fished). All trips are included in the total effort estimate, not just the trips targeting a specific species. This can lead to events where rare encounters of a given species can be expanded by a large effort estimate, resulting in an unlikely harvest estimate.

Note `wp_int` differs from `wp_catch` only for 2013-2015 Charter mode estimates in state and wave combos that suffered from small sample sizes. The estimates for these examples was done on an annual basis, not by wave.

4) Are there examples of similar occurrences of high and/or anomalous harvest estimates in other fisheries, and how have they been addressed?

There are a few examples of other anomalous estimates, such as a lightning storm that resulted in only 1 of 50 anglers to be sampled at a fishing pier site, leading to an extreme sample weight for that intercept. In this case, it was decided that the sample was not representative of the whole site.

When an estimate is flagged as potentially inaccurate, it is examined from the bottom up, looking for any issues in the catch sampling or weighting. Decisions to make adjustments are situation-specific and depend on information available about the event. Ideally, adjustments to estimates are survey based, not made to the point estimate. This is not always possible; the New York 2016 Wave 6 black sea bass estimate is a candidate that is unlikely to be fixed internally through the survey.

To deal with estimates that cannot be adjusted internally to the survey, John Foster recommended that a model be developed that fits well to reasonable data but flags unlikely estimates. Precision and sample size informing an estimate may not necessarily indicate an anomaly. Time series analysis is further complicated by regulations and spawning stock biomass that change the auto-correlation patterns in the data.

Lastly, it was noted by John Foster that black sea bass is not a rarely encountered recreational species given the fishing effort and spatial extent of the recreational fishery along the coast throughout the year. The South Atlantic is looking for approaches to treat true rare event species, such as small area estimation or multi-year moving averages.

5) How will changes between phone and mail survey affect estimates currently and moving forward?

Regarding the transition from the telephone mode (CHTS) to the mail-based FES, estimates are currently scheduled to be released in June/July 2018 for catch and effort. These will be calibrated and revised for both the APAIS design and FES changes for 1981-2017. Some degree of model and design uncertainty is incorporated, but not in a time sensitive way.

Final 2017 estimates will be released in April, still based upon the CHTS. The CHTS will end and be replaced with the FES after Wave 6, 2017.

Wrap up and next steps

To wrap up the call, ASMFC staff provided reminders of assigned tasks that will need to be completed and reported on at the upcoming in-person meeting. John Maniscalco will report on the 2016 harvest estimation the coast using status quo and his 2016 wave 6 adjustment. Morgan Brunbauer (NY) will look at a way to identify outliers in the effort data. Greg Wojcik will further develop control rule options for smoothing or adjusting estimates. Final recommendations should be developed at the November 13-14 in-person meeting to be presented to the Board at the December joint meeting.