MEMORANDUM

January 20, 2017

To: Summer Flounder, Scup, and Black Sea Bass Management Board

From: Summer Flounder, Scup, and Black Sea Bass Technical Committee

RE: TC Review of Draft Addendum XXVIII Options

List of Participants

Greg Wojcik (CT)	T.D. Middlesworth (NC)	Kirby Rootes-Murdy
John Maniscalco (NY)	Mark Terceiro (NMFS)	(ASMFC)
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The following memo contains the Summer Flounder, Scup, and Black Sea Bass Technical Committee Review of the Draft Addendum XXVIII Options for the 2017 recreational fishery.

Draft Addendum XXVIII

The Board and Mid-Atlantic Fishery Management Council (Council) approved Conservation Equivalency for managing the summer flounder recreational fishery in 2017 at their joint meeting in December 2016. Additionally, the Board approved Draft Addendum XXVIII for public comment. The Draft Addendum outlines the default management approach of the Summer Flounder FMP for Conservation Equivalency as well as offering alternative management approaches that include continuing regional management in 2017. The options in the draft addendum were developed to achieve harvest reductions agreed to by the Board and Council in August 2016.

Total estimated harvest for 2016 is projected to be 6.38 million pounds, exceeding the 2016 coastwide Recreational Harvest Limit (RHL) and requiring a reduction of roughly 2.6 million pounds or approximately 41% to achieve the 2017 RHL of 3.77 million pounds. As the Board did not specify continuation of Addendum XXVII (2016) provisions for 2017, options in Draft Addendum XXVIII outline strategies to achieve the needed reductions by evaluating harvest performance at previously specified regional levels based in part on state-by-state allocations outlined in Addendum VIII (2004). Options 1-4 specify reductions by region to achieve a total coastwide reduction of 41%. Option 5 outlines broad management measure changes to reduce harvest by approximately 28-32% depending on how possession limit is specified for certain regions.

The TC met via conference call on January 19th to review the Draft Addendum options along with Terms of Reference (TORs) provided by Board Chair Mike Luisi, as well as consider concerns raised about the discrepancies between the language for options 2-4 and their associated tables outlining 2017 harvest targets, percent reductions, and example measures. The group reviewed tables provided by Nichola Meserve (Massachusetts Commissioner Proxy) highlighting the differences in language and numbers (Appendix A). In first addressing concerns on discrepancies in the options, the TC provided the following summary points:

- Members of the TC acknowledged that while the wording of the options 2-4 provide a set of reductions for regions of Rhode Island and Connecticut through New Jersey that differs from what is indicated in the associated tables in the draft addendum, the group was in agreement that the Summer Flounder Recreational Working Group (Rec WG) intended to enact the reductions as demonstrated in the tables, not the text. One of the reasons cited, was that the reduction as prescribed in options 2-4 would be more severe for Rhode Island than any other state or region on coast. For example, based on the wording of options 2-4, Rhode Island's reduction would be higher than indicated in the document's tables; for option 2, Rhode Island's reduction would increase from approximately -32% to -59%, for option 3 it would increase from -43% to -51%, and for option 4 it would increase from -43% to -58%. The TC members noted that the intent of the Rec WG was to have regions over their 2017 allocation based on projected 2016 harvest share the burden of the reduction and not have regional reductions higher than 50%.The current draft addendum language doesn't match that intent. **Note: Some of members of the Summer Flounder Recreational Working Group are also TC members.**

- TC members noted that if the language for options 2-4 were followed verbatim, the options would be virtually the same in their reduction amounts and measures. For example, options 3-4 set forth essentially the same reductions amounts for each region in both options. Option 2 is similar, but with different reduction amounts for the regions of Delaware through Virginia and North Carolina. One of the goals of the Rec WG was to make these options distinctly different so as to not confuse the public on one option vs another. A literal reading of options 2-4 would violate that goal.

- A key component of the wording for the options 2-4 that outline a different reduction than what is listed in the tables in the document is the last the line (underlined) "The regions with their combined 2016 projected harvest above their combined 1998-based allocations for 2017 (RI, CT–NJ) are responsible for the rest of the coastwide reduction…the remaining reduction is distributed among these regions according to the 1998-based proportions". TC members noted that while following the '98 allocations from Addendum VIII would make sense for allocating additional fish/harvest, using it to further apply reductions would be more punitive. For example, Rhode Island's projected harvest relative to coastwide harvest in 2016 is approximately 4.4%; the region of Connecticut-New Jersey's projected regional harvest in 2016 relative is approximately 83%. Allocating the additional reduction proportional to these regions treats their reduction burden equally relative to the coastwide harvest, when they account for significantly different percentages of it.

- Overall, TC members voiced concern with the language in the draft addendum for options 2-4 for how the reduction should be taken by the regions over their collective 2017 allocation ('98 harvest proportions from Addendum VIII) based on projected 2016 harvest. Some of the TC members recommended that the language for those options should be re-worded to achieve the intent of the Rec WG.

Following the discussion on the discrepancy in language vs tables information, the TC considered all of the options relative to the TORs. Below is the TC's summary points for each TOR:

1. *Evaluate the effectiveness and predictability of crafting measures with the current standard methodology (minimum size limits, possession limits, open seasons), using the previous year's harvest data, to control harvest the following year.*

The TC expressed concern over the predictability of crafting measures to achieve a specified harvest target at the state or regional level through the conventional tools (minimum size limits, possession limits, open seasons) and methodology (Total Reduction = (**X**+**Y**) - (**X*****Y**); **X** = The percentage decrease associated with seasonal closure(s). **Y**=the percentage decrease associated with size/possession limit) using the previous year's harvest data to constrain the following year's harvest. Harvest estimates have varied by approximately 50% in the last 3 years at the coastwide level (2.5 million – 1.6 million fish) under nearly identical measures, and volatility increases as one considers estimates at the regional or state level.

In considering the predictability of crafting measures to achieve the coastwide harvest, it's important to note that the survey has continually changed in sampling design and estimation over time. Initiated in 1979, MRFSS (Marine Recreational Fishery Statistics Survey) on the Atlantic Coast has undergone a number of changes including the implementation of the For-Hire Survey in 2003. It was recognized by the NRC in 2006 that the then-current sampling design and catch estimation method was resulting in biased estimates. Subsequently, in 2012 catch estimates from 2004-2011 were improved, the sampling design was updated in 2013, and MRFSS was replaced with the Marine Recreational Information Program (MRIP). Coastwide state (vs. contractor) conduct of catch sampling (APAIS or Access Point Angler Intercept Survey) began in 2016. For the purposes of management the survey has been treated as a single consistent time series, but this is not the case. The continued changes in the MRIP methodology creates instability in the data and presents further challenges to crafting measures based on the data.

The TC noted that another important challenge to crafting measures based on MRIP data is that MRIP generates harvest estimates, which include both a point estimate and a measure of precision. The current methodology makes little allowances for consideration of the percent standard error (PSE). Instead of being able to evaluate the projected harvest to the actual harvest (i.e. commercial landings), the TC's evaluation of past performance is always looking at inherently uncertain estimates to predict future harvest estimates that are equally uncertain. In addition, due to the timeline of events, the Technical Committee works almost exclusively with preliminary harvest data when performance is ultimately weighed against the final estimates not available until months later. This creates problems for truly validating the performance of measures. These challenges are not unique to summer flounder (similar issues exist for crafting management measures for other recreationally caught species), but given that summer flounder is one of the best sampled species

on the coast, a fair assumption would be that harvest estimates should be less variable year to year for this species. Recent years' data demonstrates that this is not the case.

2. *Evaluate the utility and/or pitfalls of using any single year as a baseline for making state-specific harvest allocations.*

Basing allocations upon any single year of recreational harvest estimates is problematic because it does not account for inter-annual variability or non-random changes over time. Inter-annual variability could be a result of many factors; including survey variability (in both catch and effort sampling), fish availability to anglers, and fishing effort due to weather, regulations, or fuel costs; among other things. Non-random change in harvest estimates could result from unrecognized survey changes (as briefly outlined above), or changes in the distribution and/or demographics of a species. The variability in the last 3 years (2014-2016) of recreational summer flounder harvest estimates, coastwide swings of 50% year to year, could be influenced by both stochastic variability and survey changes such as the implementation of state conduct of APAIS.

The 1998 baseline year is now almost 20 years old. When it was established, MRFSS harvest estimates indicated that Virginia harvested 16.7% of the coastwide total while Connecticut harvested 3.7% under the same exact regulations. Since then, harvest estimates have changed along the coast significantly along with fishing regulations, stock characteristics and distribution, and survey execution and estimation. Connecticut currently (2014-2016) has an open season one third as long as Virginia, and a minimum size limit 2 inches larger. Under these more restrictive rules, over the last 3 years, average Connecticut harvest is greater than Virginia's. A single historical year not only fails to account for unpredictable variation but also does not capture system wide changes.

3. *Are reduction targets (such as those found in Options 1-4) achievable with any degree of confidence using the standard methodology? Does the Committee have a basis for determining how much more effective those options may be at constraining coastwide harvest when compared to broad stroke measures such as those proposed in Option 5?*

The TC agreed that Option 5 was more likely to achieve a ~30% harvest reduction than Options 1 through 4 were likely to achieve a 41% reduction, mainly due to the fact that given all of the variability in the information on which the reduction calculations are based, the ability to achieve a more modest goal is believed to have a higher probability of being realized than a more conservative goal. Option 5 is based upon broad strokes to reduce harvest through universal minimum size increases and consistent lower possession limits. In addition to decreasing the number of fish harvested, the minimum size limit increases may grant some protection to younger year classes and it is hoped that smaller possession limits will reduce MRIP variability by dampening the inflammatory potential of heavily weighted intercepts. The measures proposed in Option 5 also continue the progress towards equitable access that have occurred under regional management thus far. In contrast, Options 1 through 4 distribute reduction burden based upon performance relative to 1998 allocations and would in some cases further exacerbate disparity among state regulations. Options 1 through 4 generally place the heaviest reduction burdens on RI and the CT-

NJ Region, although in many cases other states/regions are taking ~30% reductions. RI and CT-NJ are likely to employ size limit, possession limit, and season length to achieve the required reductions but it is not possible to determine how effective those changes will be. While the reduction value of changes to bag and season can be "calculated" as part of the standard methodology, the actual impact on harvest and harvest estimates is far less certain. We have seen that variability in actual harvest and in harvest estimates is high, and large reductions in a small number of states/regions may not be realized whereas the broad measures in Option 5 are more likely to be effective in at least some portions of the coast.

4. *In light of the results of the prior explorations, what level of confidence does the TC/MC have in using the standard methodology to manage recreational fisheries in the future?*

The standard methodology is problematic for a large number of reasons, many already pointed out above. Harvest estimates are highly variable from year to year, even when recreational measures have not changed. This was apparent in 2014-2016 under coastwide consistent measures. At the individual state level, when no changes were made to recreational measures, harvest estimates changed in 29 out of 30 cases (ranging from - 68% to +261%).

In attempting to manage the recreational fishery in a manner similar to the commercial fishery, assumptions about data accuracy and precision are being made that are not true. The RHL is provided as a target, based upon the stock assessment and fixed through the Council specification process. Up until this point, uncertainty in many different forms has been considered and no single data source predominates. By comparison, recreational management utilizes only preliminary MRIP harvest point estimates, sans measures of uncertainty, to attempt to predict/constrain future harvest point estimates.

It is very difficult to measure the effect that changing individual measures has on harvest estimates because it is rare that only one aspect (size, season or bag) has been manipulated, confounding the data. Increasing the size limit ought to result in less landed fish, resulting in some benefit to the stock. However, the relationship between size limit change and MRIP harvest estimate change (size change $\neq 0$, combined with little or no other changes made to measures) is weak and not significant (P>0.05, R^2 = 0.10, n=23). Change in season length (subsetting the data for no size limit change, minimal change to bag limit, and ± at least 1 day) was also not significantly related to changes in harvest estimate (P>0.05, R^2 = 0.21, n=17). Reducing season should reduce harvest by limiting effort. However, the value of days added or removed to a season is highly inconstant because of the potential for recoupment and the fact that data resolution forces us to consider all days within a wave to be equal (an assumption that is most likely violated). Possession limit is perhaps the hardest measure to judge effectively. Few anglers "limit out" but the perception is that when a possession limit becomes too low, angler interest fades. Individual angler experience may not change, but the for-hire industry and fishing retail businesses may suffer. The sample size of less confounded possession limit changes is insufficient to conduct an analysis. Besides a tenuous conservation benefit, reasonably low possession limits may decrease the influence that heavily weighted intercepts can have on harvest estimates. A multi-variate analysis of the impact changing recreational measures has had on harvest estimates would increase our ability to judge the effectiveness of the standard methodology. The technical committee's efforts are currently time-

constrained but looking at single factors (above) suggest that the standard methodology has performed poorly.

The TC notes there is limited time annually to undertake more extensive analysis due to the timing of when data becomes available and when the Board must make management decisions. For example, preliminary harvest estimates through wave 5 did not become available until after the Joint Board and Council meeting in December 2016 (December 16th). It is expected that preliminary data and past year's performance will be evaluated to predict the current year's performance in preparation for the ASMFC Winter Meeting. The TC has only a couple of weeks to conduct analysis during which time holidays and public comment and hearings for addenda take place. Both the timetable and data limitations, as previously stated, limit the TC's ability to fully evaluate the data and provide recommendations to effectively constraint harvest to an annual changing target.

The Technical Committee recognizes the 2013 summer flounder stock assessment and its updates through 2016 as the best available science. The assessment utilizes numerous indices and multiple catch time series. The TC agrees with the findings of the recent stock assessments for summer flounder that the resource is declining in abundance and that associated management changes are need to address this issue, in this case a reduction in the RHL. The TC recommends uniform adjustments from 2016 management measures, similar to those proposed in Option 5, to reduce harvest and fishing mortality. Given the variability of recent coastwide harvest point estimates under consistent measures (±50%), the unconsidered measures of precision surrounding those point estimates (~8%), and the poor track record of the standard methodology demonstrated in the analyses above, the TC feels that the changes made to measures under Option 5 will reduce harvest in an equitable manner without imposing undue harm to the recreational fishery.

Harvest by recreational fisheries should be heavily dependent upon fish availability so a declining population should result in declining harvest. MRIP harvest estimates do not show this trend over the last 3 years but it is only a single source of information. Consistent recreational summer flounder measures over the last 3 years has provided the Board and the TC with a new opportunity to evaluate MRIP data and determine how it is used in the future by all levels of management. The TC recommends that measures suggested under Option 5 be put in place and be allowed to remain constant until review of the next benchmark assessment results, unless future updates warrant immediate action.

While this document focuses heavily upon summer flounder, its conclusions probably apply to all recreational fisheries. Summer flounder is relatively well sampled by MRIP, and therefore the resulting harvest estimates should be relatively robust when compared to other species.

Hypocritical Math:
Using the standard methodology for calculating the reduction value of changes to measures, a 1 inch size increase combined with lower possession limits (3 fish specifically in CT-NJ) coastwide results in a ~31% reduction in 2016 harvest estimates.

Under consistent measures from 2014-2016, coastwide harvest estimates average ~6.2 million pounds requiring a 39% reduction to meet the 2017 RHL. The PSE associated with harvest estimates

of summer flounder from the North and Mid-Atlantic States is ~8%, placing the projected 2017 harvest under Option 5 within a single Standard Error of the 2017 RHL.

Appendix A.
Option 2: One-Inch Size Increase as a Minimum Reduction

This option starts by applying a one-inch minimum size increase to all regions, and projecting the regional harvests that would occur in 2017. For regions with their combined 2016 projected harvest below their combined 1998-based allocations for 2017 (MA, DE–VA, NC), the 2017 projected regional harvest (under a one-inch size increase) becomes their 2017 harvest target. Reduction rates for these regions are then calculated. The regions with their combined 2016 projected harvest above their combined 1998-based allocations for 2017 (RI, CT–NJ) are responsible for the rest of the coastwide reduction that is needed to not exceed the 2017 RHL. The remaining reduction is distributed among these regions according to the 1998-based allocations proportionally.

Option 2 Table (AS DESCRIBED IN TEXT)

	2016 Projected Harvest	2017 Allocation	Reduction from 1" Size Increase	Projected Harvest from 1" Increase	Remaining Fish to Cut	1998 Proportions	Scaled Proportions	Additional Fish to Cut	2017 Target	Percent Reduction
MA	56,642	68,161	31%	39,083					39,083	-31%
RI	92,821	70,639	32%	63,118		5.7%	8.6%	25,040	38,078	-59%
CT-NJ	1,741,237	748,529	27%	1,271,103		60.4%	91.4%	265,339	1,005,764	-42%
DE-VA	191,636	282,557	25%	143,727					143,727	-25%
NC	17,074	69,400	26%	12,635					12,635	-26%
Total	2,099,410	1,239,286		1,529,666	290,380			290,380	1,239,286	

Yellow= indicates difference with document language/information

Option 2 Table (AS PRESENTED IN THE DRAFT ADDENDUM)

	2016 Projected Harvest	Reduction from 1" Size Increase	Projected Harvest from 1" Increase	2017 Allocation	Extra Fish To Share	1998 Proportions	Scaled Proportions	Received Fish	2017 Target	Percent Reduction
MA	56,642	31%	39,083	68,161	29,078				39,083	-31%
RI	92,821	32%	63,118	70,639	7,521				63,118	-32%
CT-NJ	1,741,237	27%	1,271,103	748,529		60.4%	100.0%	232,194	980,723	-44%
DE-VA	191,636	25%	143,727	282,557	138,830				143,727	-25%
NC	17,074	26%	12,635	69,400	56,765				12,635	-26%
Total	2,099,410		1,529,666	1,239,286	232,194			232,194	1,239,286	

Option 3: 30% Reduction as a Minimum

This option starts by applying a 30% harvest reduction to all regions' 2016 projected harvest (based on the 30% reduction in the 2017 RHL). For the regions with their combined 2016 projected harvest below their combined 1998-based allocations for 2017 (MA, DE–VA, NC), the 30% reduction establishes their 2017 harvest target. The regions with their combined 2016 projected harvest above their combined 1998-based allocations for 2017 (RI, CT–NJ) are responsible for the rest of the coastwide reduction that is needed to not exceed the 2017 RHL. The remaining reduction is distributed among these regions according to the 1998-based proportions.

Option 3 Table (AS DESCRIBED IN TEXT)

	2016 Projected Harvest	2017 Allocation	Initial Uniform 30% Reduction	Projected Harvest from 30% Cut	Remaining Fish to Cut	1998 Proportions	Scaled Proportions	Additional Fish to Cut	2017 Target	Percent Reduction
MA	56,642	68,161	30%	39,649					39,649	-30%
RI	92,821	70,639	30%	64,975		5.7%	8.6%	19,860	45,115	-51%
CT-NJ	1,741,237	748,529	30%	1,218,866		60.4%	91.4%	210,441	1,008,425	-42%
DE-VA	191,636	282,557	30%	134,145					134,145	-30%
NC	17,074	69,400	30%	11,952					11,952	-30%
Total	2,099,410	1,239,286		1,469,587	230,301			230,301	1,239,286	

Yellow= indicates difference with document language/information

Option 3 Table (AS PRESENTED IN THE DRAFT ADDENDUM)

	2016 Projected Harvest	2017 Allocation	Reduction for Regions < 2017 Allocation	Projected Harvest from 30% Cut	Remaining RHL	Remaining Reduction Needed (%)	2017 Target	Percent Reduction
MA	56,642	68,161	30%	39,649			39,649	-30%
RI	92,821	70,639					53,319	-43%
CT-NJ	1,741,237	748,529					1,000,221	-43%
DE-VA	191,636	282,557	30%	134,145			134,145	-30%
NC	17,074	69,400	30%	11,952			11,952	-30%
Total	2,099,410	1,239,286		185,746	1,053,540	-43%	1,239,286	

Option 4: One-inch Size Increase and 30% Reduction as a Minimums

This option starts by applying a one-inch size increase to all regions, and projecting the regional harvests that would occur in 2017. For regions with their combined 2016 projected harvest below their combined 1998-based allocations for 2017 (MA, DE–VA, NC), if a one-inch size increase achieves a 30% reduction, the 2017 projected regional harvest becomes their 2017 harvest target. If less than a 30% reduction is achieved, the region must further reduce its harvest target (i.e., tighten regulations) to achieve a 30% reduction. If more than a 30% reduction is achieved, the region may increase its harvest target (i.e., loosen other regulations) to achieve a 30% reduction. The regions with their combined 2016 projected harvest above their combined 1998-based allocations for 2017 (RI, CT–NJ) are responsible for the rest of the coastwide reduction that is needed to not exceed the 2017 RHL. The remaining reduction is distributed among these regions according to the 1998-based proportions.

Option 4 Table (AS DESCRIBED IN TEXT)

	2016 Projected Harvest	2017 Allocation	Reduction from 1" Size Increase	Reduction for Regions< 2017 Allocation	Projected Harvest	Remaining Fish to Cut	1998 Proportions	Scaled Proportions	Additional Fish to Cut	2017 Target	Percent Reduction
MA	56,642	68,161	31%	30%	39,649					39,649	-30%
RI	92,821	70,639	32%		63,118		5.7%	8.6%	24,204	38,914	-58%
CT-NJ	1,741,237	748,529	27%		1,271,103		60.4%	91.4%	256,477	1,014,626	-42%
DE-VA	191,636	282,557	25%	30%	134,145					134,145	-30%
NC	17,074	69,400	26%	30%	11,952					11,952	-30%
Total	2,099,410	1,239,286			1,519,968	280,681			280,681	1,239,286	

Yellow= indicates difference with document language/information

Option 4 Table (AS PRESENTED IN THE DRAFT ADDENDUM)

	2016 Projected Harvest	Reduction from 1" Size Increase	Reduction for Regions< 2017 Allocation	Projected Harvest	2017 Allocation	Remaining RHL	Remaining Reduction Needed (%)	2017 Target	Percent Reduction
MA	56,642	31%	30%	39,649	68,161			39,649	-30%
RI	92,821	32%			70,639			53,319	-43%
CT-NJ	1,741,237	27%			748,529			1,000,221	-43%
DE-VA	191,636	25%	30%	134,145	282,557			134,145	-30%
NC	17,074	26%	30%	11,952	69,400			11,952	-30%
Total	2,099,410			185,746	1,239,286	1,053,540	-43%	1,239,286	