

Memo

To: ASMFC - Commissioners and Summer Flounder Board
Mid-Atlantic Fisheries Marine Council Members
Dustin Colson Leaning, Fishery Management Plan Coordinator ASMFC
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From: Thomas B. Smith

Date: November 7, 2019

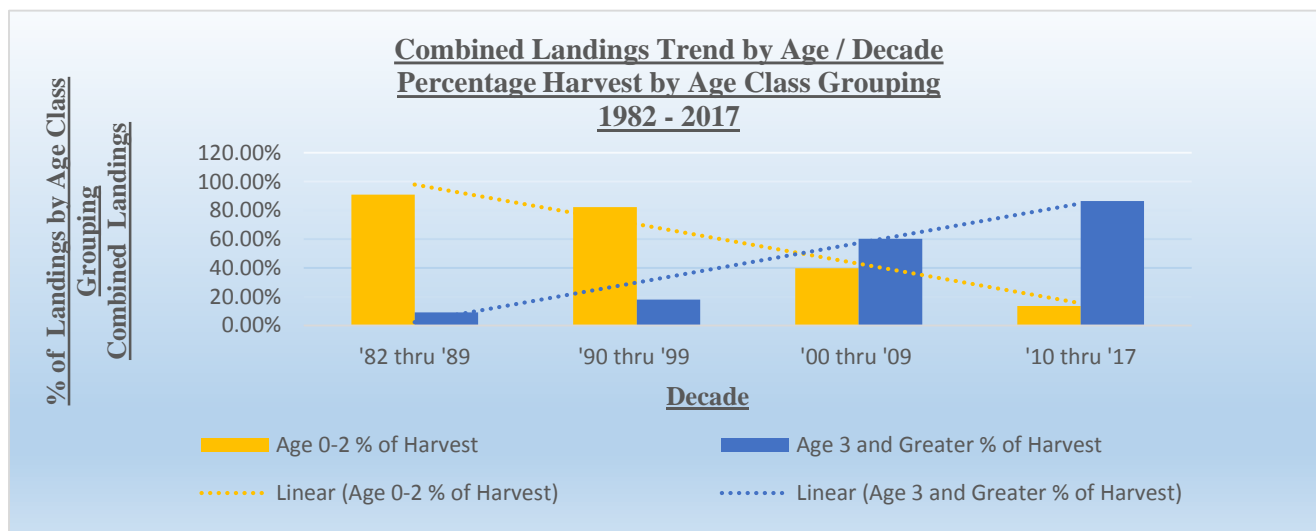
Re: Summary Summer Flounder Stock – Comments for Consideration at Upcoming December 10 – 12th Joint Meeting in Annapolis, MD

For anyone on the ASMFC or MAFMC Commission or Council, you should have received analysis and commentary regarding the state of the summer flounder fishery in the Mid-Atlantic region as part of the briefing materials provided for the October meeting at the Durham Convention Center. At that meeting, Kiley Dancy gave a presentation of the summer flounder stock which included a few comments from that analysis. I'm sending this document, along with said briefing material document from the October meeting, to all Commission and Council Members as it is still my strong belief the fishery is in trouble and continuing to experiencing problems which have caused a 15-year decline in every aspect of the fishery which will continue unless fundamental changes are made to the current regulations. The analysis, finding and conclusions drawn are based on data extracted from the 66th and 57th SAW reports, no third party data is being introduced.

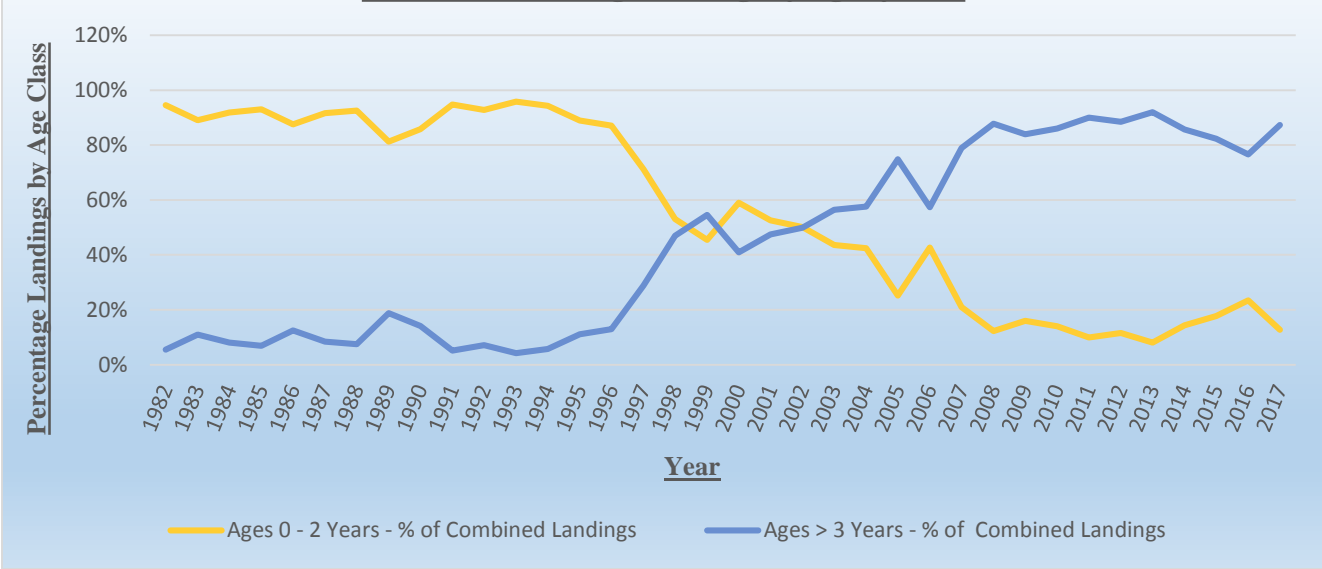
My intention again is to elevate to the attention of the Commission and Council Members substantial changes and materially altering trends in the Summer Flounder Fishery leading to substantive declines over a prolonged time frame. Declines in my opinion caused by unintended consequences from past policy decisions which trend analysis all but guarantees will continue in the absence of a fundamentally new approach to managing the stock.

Landings Composition:

Combined landings (commercial and recreational) over the last four decades as it relates to age classes being harvested has experienced an unprecedented shift. Following charts illustrates that alteration:



Combined Percentage Landings by Age by Year



- 91% of combined landings between the period 1982 to 1989 represented age classes 0 – 2 when a 13” size minimum was in place.
- The trend of harvesting larger fish changed in the mid-nineties and accelerated when recreational size limits experienced a continued series of mandated increases while commercial, allowed to harvest 14” fish, electively increased presumably as a result of harvesting larger higher market value fish to mitigate consequences of reduced catch quotas and protect / grow ex-vessel values (orange line below graph). *Source - Page 7 MAFMC Summer Flounder Fishery Information Document August 2019*
- For the period 2010 to 2017, ~87% of landings now consists of age classes 3 and above. Important to note increases are not concentrated in any singular age class as all age classes 3 and above have experienced substantial increases in harvest relative to the late 80’s and 90’s per the below graphs.

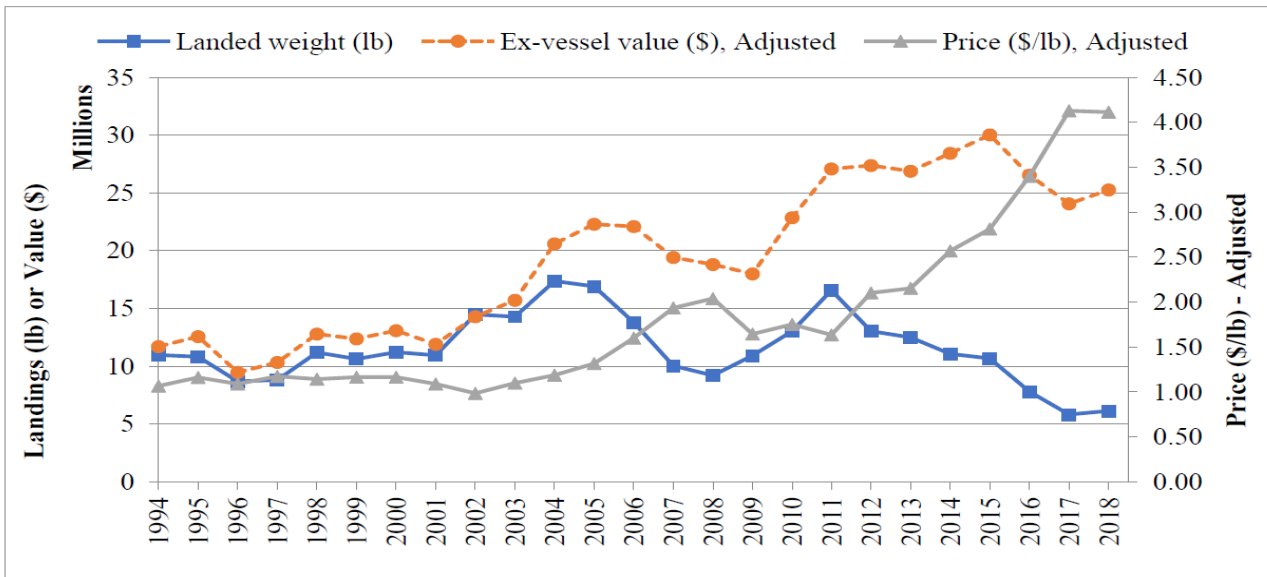
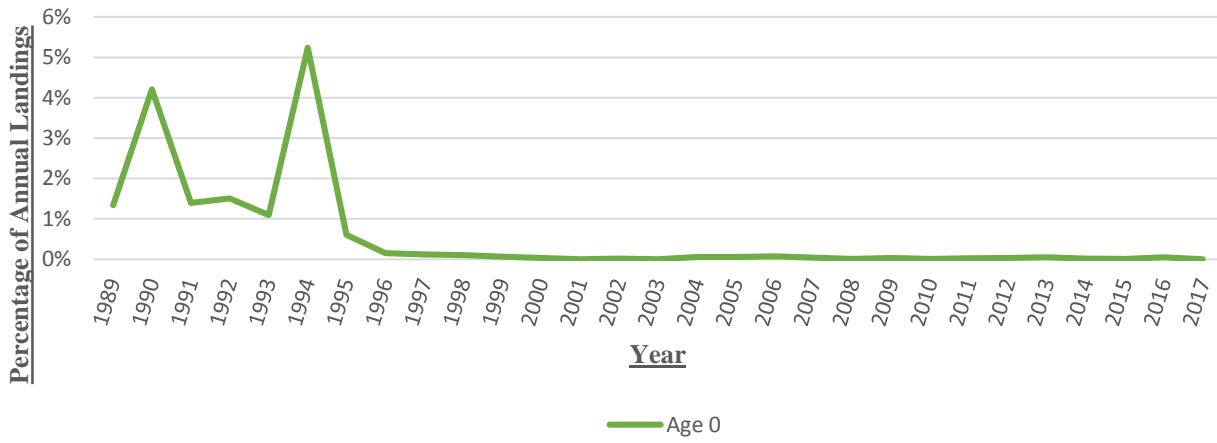
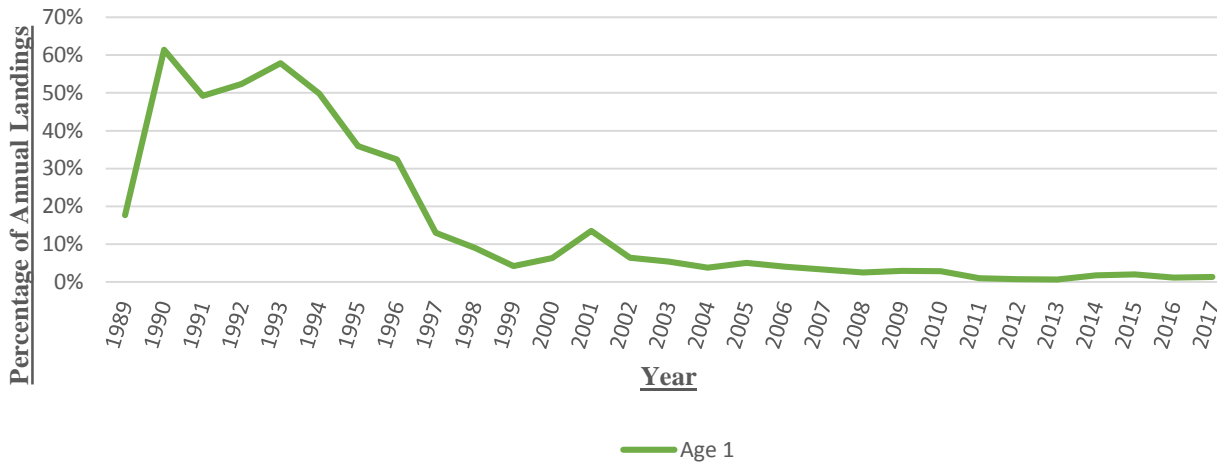


Figure 4: Landings, ex-vessel value, and price per pound for summer flounder, Maine through North Carolina, 1994-2018. Ex-vessel value and price are adjusted to real 2018 dollars using the Gross Domestic Product Price Deflator (GDPDEF).⁴

Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 0



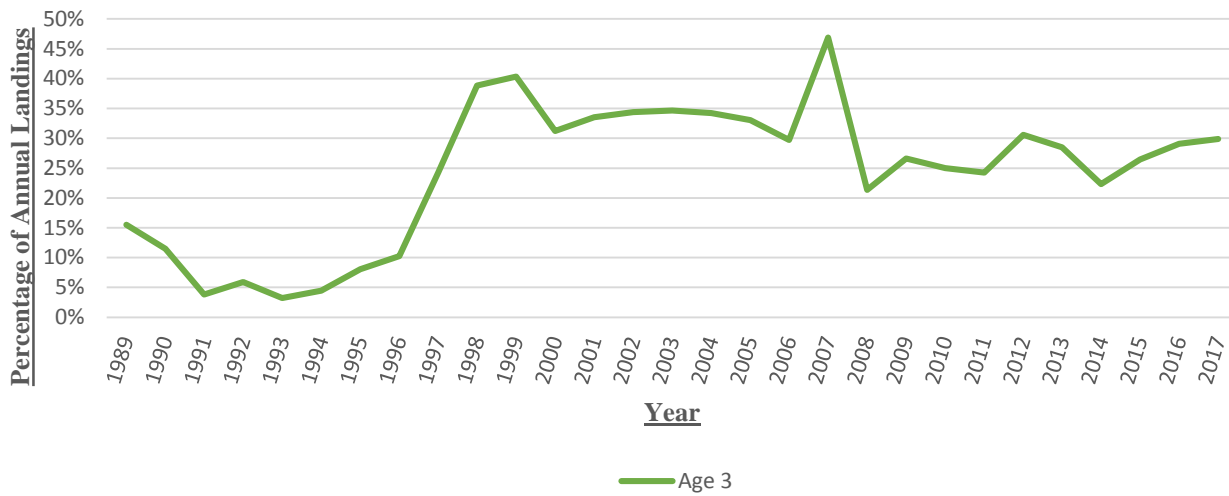
Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 1



Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 2



Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 3



Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 4



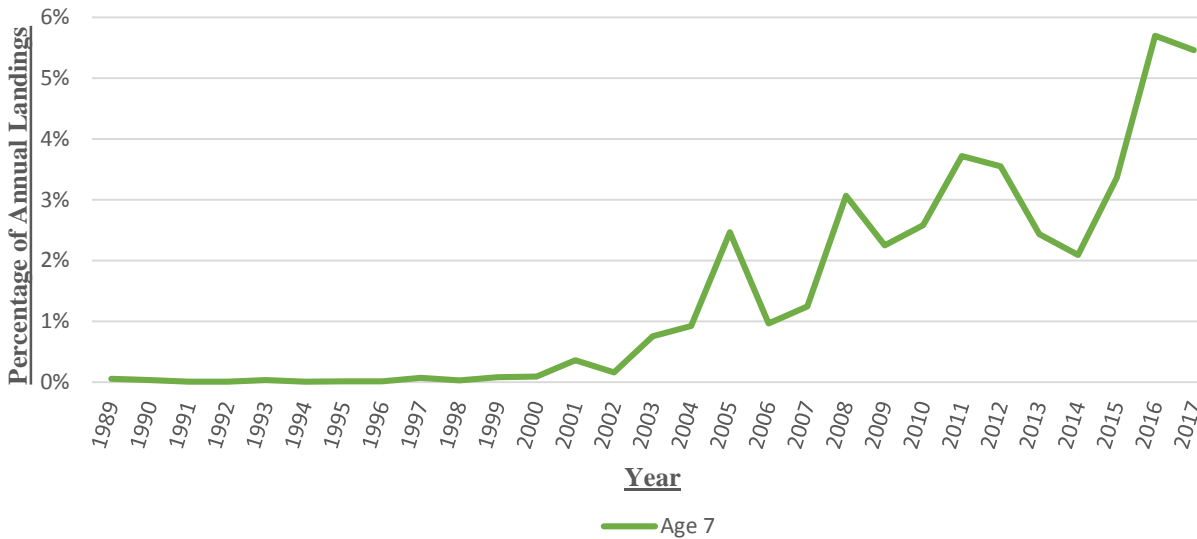
Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 5



Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 6



Historical Percentage of Combined Summer Flounder Landings Trend - Age Class 7

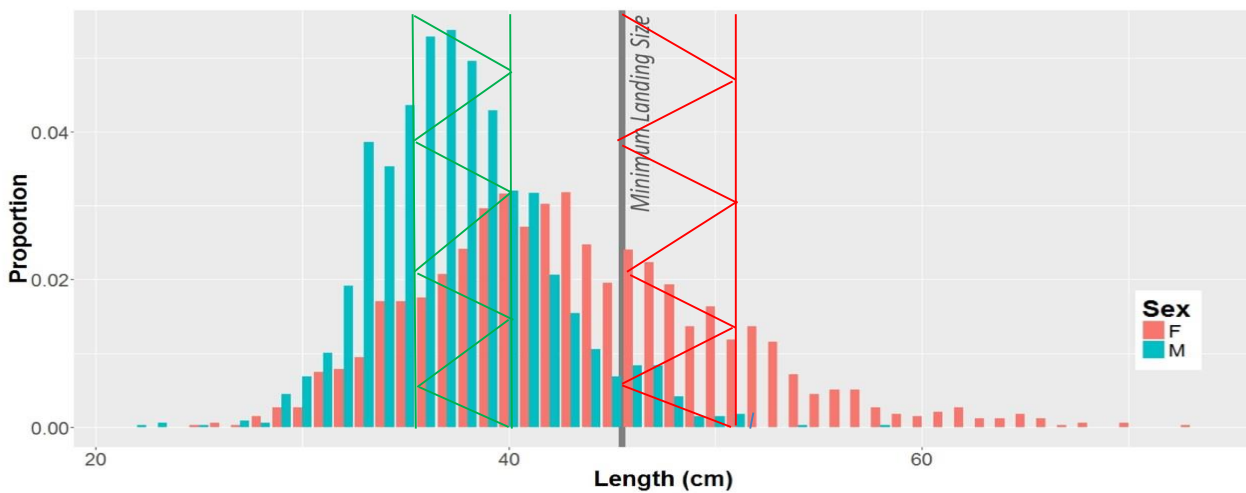
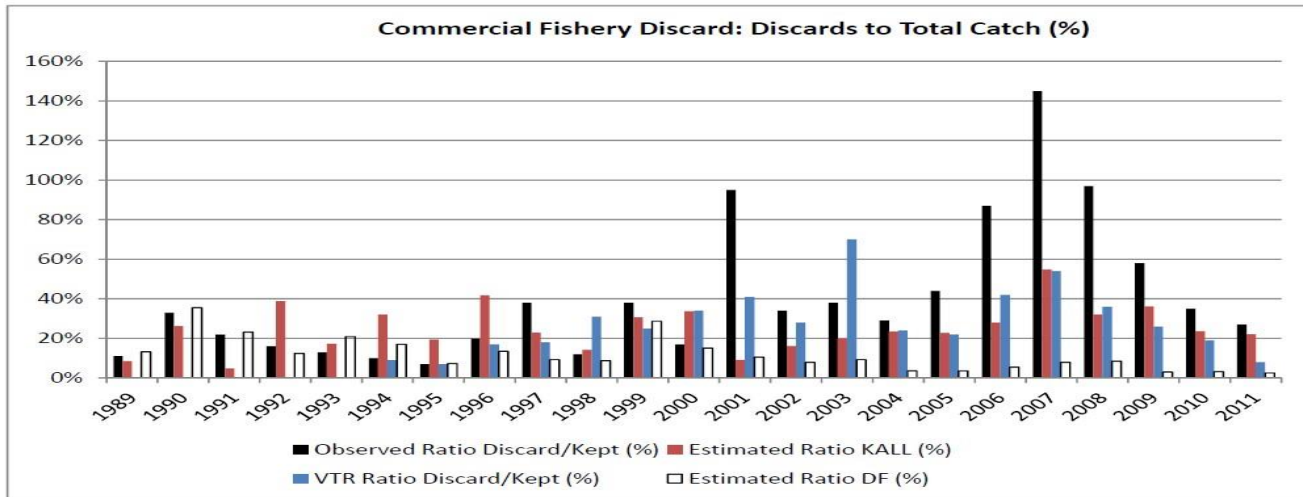


The above shift in catch composition, in spite of decreases in overall landings between 2004 and 2017 from 17,496 metric tons to 7,209 metric tons (an ~60% decrease) resulted in an ~37% decrease in SSB and an ~40% reduction in annual recruitment over the same period. Not only has SSB decreased, significantly more important is the gender composition of SSB has been materially impaired as stated in the following excerpt from the 66th SAW.

In the fall survey, the proportion of females shows no trend for age 0 and the mean proportion was 0.3. **For ages 1-3 the proportion has DECREASED from about 0.5-0.6 in the 1980's to 0.4-0.5 by 2012-2016. The proportions at ages 4 to 7 have STRONGLY DECREASED from about 0.8 through the late 1990's to about 0.3-0.8 by 2012-2016;** proportions at age 8 are highly variable (Figure A90).
Source 66th SAW - page 61.

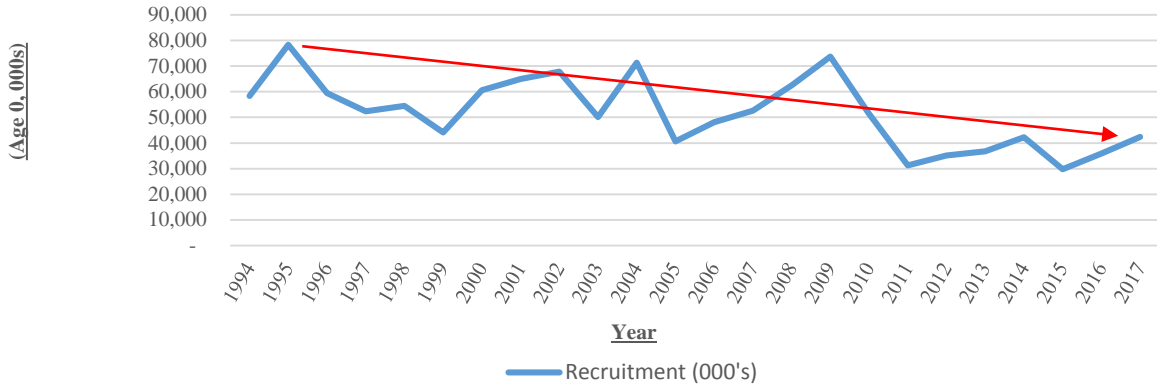
Based on the above statement and below five graphs, the harvest of older age class fish created multiple problems in the fishery, all directly impacting gender composition of SSB, its relative recruitment

strength, overall catch and discard levels. When larger fish started being harvested, commercial discard rates grew exponentially higher, SSB in the absolute declined, more important the gender composition of SSB was materially altered resulting in recruitment statistics dropping precipitously. Discard rates from observed trawls 1989 to 2012. *Source - Page 302, 57th SAW*

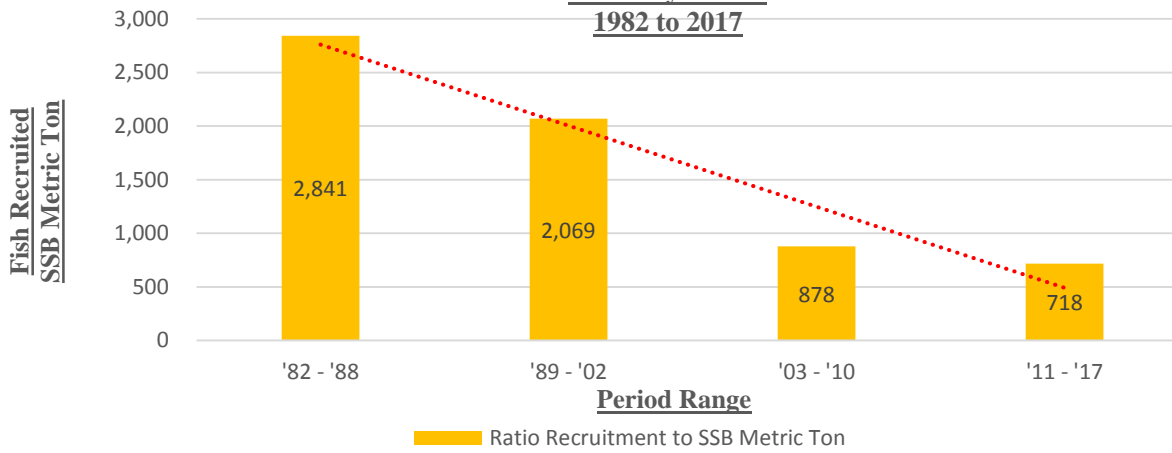


The above graph obtained from “Rutgers Sex and Length Study” illustrates the biggest threat to today’s fishery. The green shaded area represent size fish harvested in the 80’s and 90’s when SSB increased ~900%. Red shaded area represents the size fish being harvested today and for the better part of the last two decades. Notice the change in proportion between males and females. **During the 80’s and 90’s, the ratio of catch was almost 2:1 male to females. Last two decades, it’s closer to 4:1 female to males. The gender composition of SSB has been and continues to be decimated. Since a high percentage of the commercial harvest occurs in the fall / winter months during the stock’s spawn, a question which needs to be asked and answered is what impact is all this having on the efficacy of the spawn.**

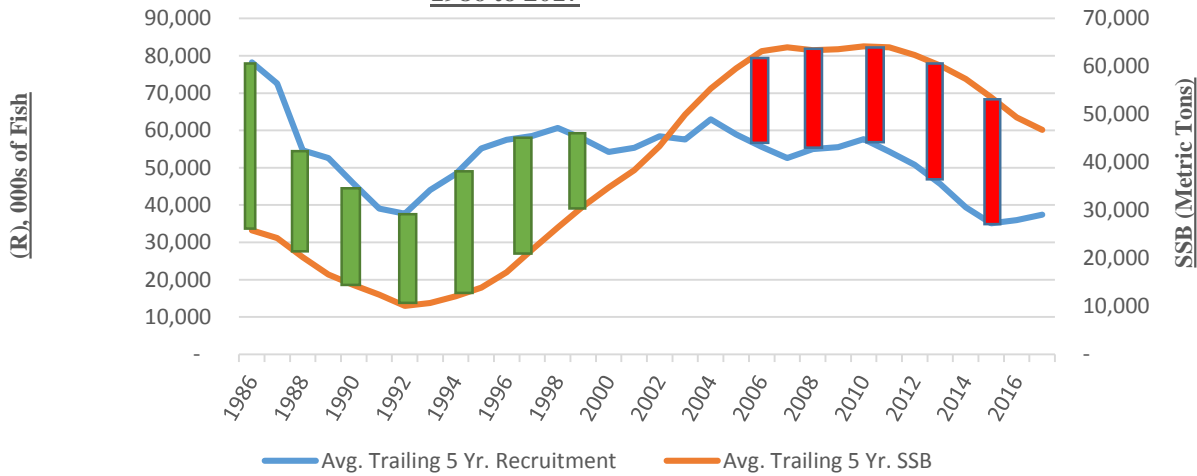
Recruitment Trend
1994 to 2017



Average Recruitment to SSB Metric Ton
Trend by Period
1982 to 2017



Recruitment to SSB Trend
Trailing 5 Year Average
1986 to 2017



I'd like to share dialogue I had with a Council Member regarding how data is being interpreted and used as a basis for policy decisions with the summer flounder fishery. My initial comments are in red in quotes. Black represents the Council Member's replies followed by my thoughts again in red regarding key issues effecting the fishery.

"substantial and continued declines in recruitment" - I have referenced in our discussions multiple reasons why recruitment may be a paper issue, including sampling not occurring where juveniles are, gear not optimized for catching of juveniles, and similar trends occurring with multiple species of flatfish nearly simultaneously. If you want to use science center data, the 2019 update shows improvements in recruitment in recent years. "Paper issue" translated means the data may be wrong. If so, inaccurate data understating recruitment and as a result the biomass in general has been driving more restrictive policy decisions. Conversely if the data is accurate and representative which we've been asked to believe, there's a significant problem with recruitment which hasn't been addressed for the better part of two decades. 1989 to 2003 annual recruitment averaged ~54 million recruits based on an average SSB of 29,000 metric tons. From 2011 to 2017, it averaged ~36 million recruits based on an average SSB of 50,000 metric tons. A 34% decrease in recruitment based on a 73% increase in SSB. The result of the erosion taking place with the gender composition of SSB and potentially the adverse effects associated with the harvest of almost exclusively breeder summer flounder commercially during their spawn.

"The fishery is in dire trouble" - The fishery may have shifted, but shows high availability in both recreational and commercial catches, particularly to the east. Using "their" data, SSB is 5x where it was 30 years ago. 30 years ago brings us back to 1988 when the fishery for all practical purposes collapsed with an SSB level of ~9,000 metric tons and a recruitment level of ~12.4 million new recruits, both the lowest recorded levels over the last 35 years. I would hardly suggest using that as a baseline measurement to illustrate the health of the fishery. **Fact is the fishery since 2003 when SSB attained its all-time high, recruitment, catch and SSB have decreased by 40%, 54% and 32% respectively while the overall biomass has decreased by 62 million fish or ~34%. And the trend analysis all but guarantees those decreases will continue until the issues causing those declines are addressed.** More important, SSB is defined as "The total weight of all sexually mature fish in the stock" so gender composition is not a factor in the calculation of SSB. SSB in the absolute is down 32% since 2004 compounded by the fact the female composition of age classes 1 to 7 have strongly decreased creating a material gender imbalance destroying recruitment strength. So yes, in my opinion based on the facts, this fishery is in dire trouble. Without changes in the regulations reversing the harvest of older age classes and correcting the unintended consequences it created of higher discard rates and the potentially disastrous impacts on the spawn, there's no logical reason to believe the fishery will rebound on the basis of its own merits.

High availability in both recreational and commercial catches, not sure how that position is supportable when as I mentioned earlier catch levels are down 54% since 2004. The data is indisputable in that respect. Commercial availability is a different story which I've commented on previously in the briefing materials. **Due to the disparity in size limits between recreational and commercial concerns, commercial operators have ~35 MILLION more fish they can harvest from the existing biomass than recreational.** So while I agree there's more fish for commercial parties to harvest, that's not indicative of a growing fishery. It's the result of a significant percentage of the biomass being made available to commercial interests for their exclusive harvest, an extremely disparate allocation of the resource. A serious problem created when size limits between both recreational and commercial were changed in the mid to late nineties, intensifying over subsequent years as recreational size limits continued to increase.

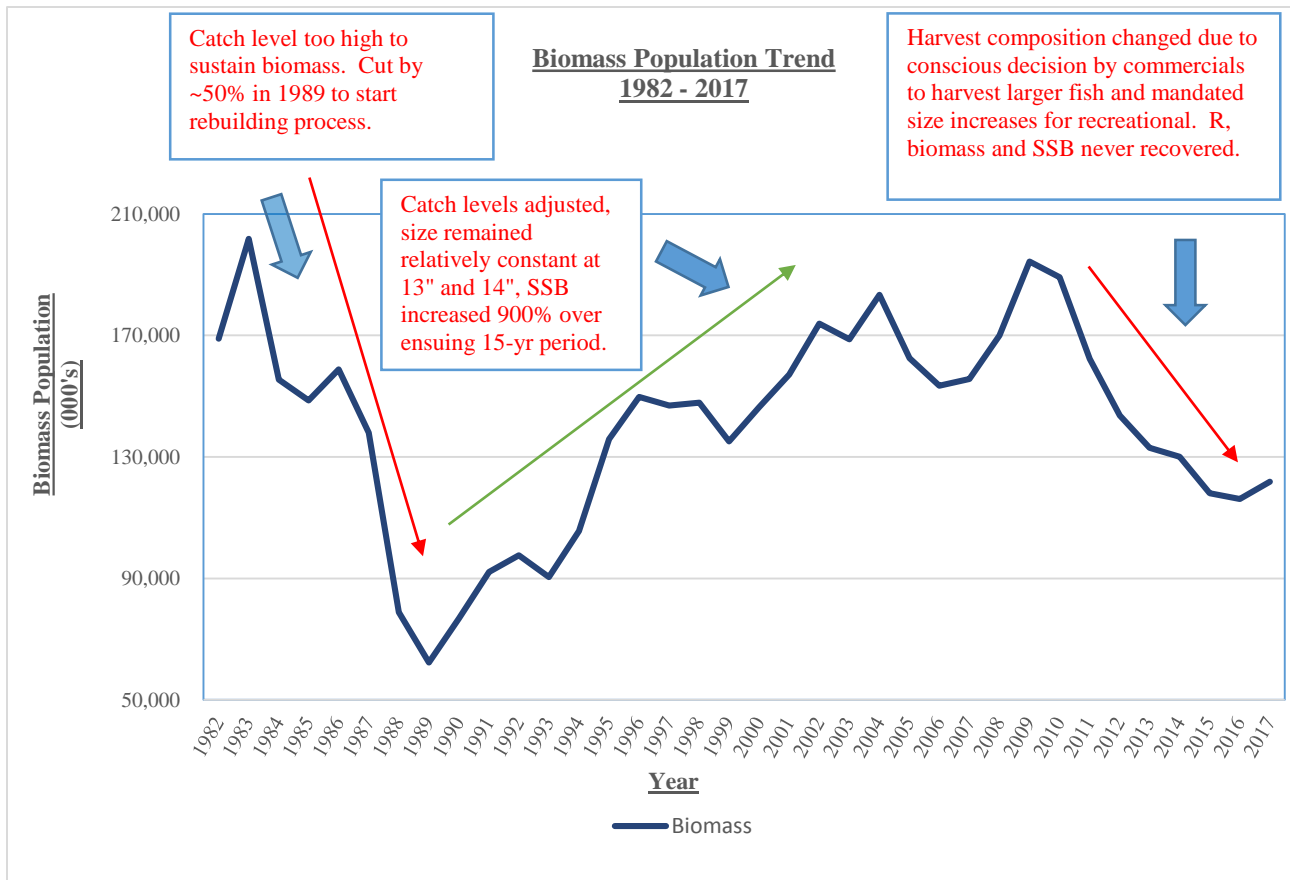
"Reproductive strength of the stock...has been destroyed" - My comments above re recruitment and availability support my disagreement with this statement. Couldn't disagree more with this explanation. Recruitment in the absolute and as a percentage of SSB has been declining for the better part of the last two decades and more recently at an accelerated pace. The data is indisputable in this respect as well. 50% increase in commercial quotas and continued harvest of almost exclusively female breeders will assuredly continue that decline. It has no choice. The stock has shown no signs of steepness in the last

35 years and with the gender balance created over the last two decades, there's no logical reason to believe it will develop that trait prospectively.

"scientists have stated going to a slot or reducing size minimums will further hurt this fishery" - I have never heard this statement outside of the context that as a result of current management mechanisms, in order to go to a smaller slot or minimum size, significantly shorter seasons would be required to constrain harvest to allowable levels...but not in a context that it would be biologically harmful. I would think the positive impact slot sizes or lower size limits in general would have in reducing recreational discards which carry a 33% mortality factor would more than cover the need to shorten seasons if instituted. That aside, it's perplexing how we had an 8 to 10 possession limit at 13" and 14" or slightly higher between 1989 and 2003 with catch levels during that period significantly greater than today resulting in 900% growth in SSB but the introduction of a slot fish would cause the need to shorten seasons more than they've already been. The logic behind those two thought is mutually exclusive.

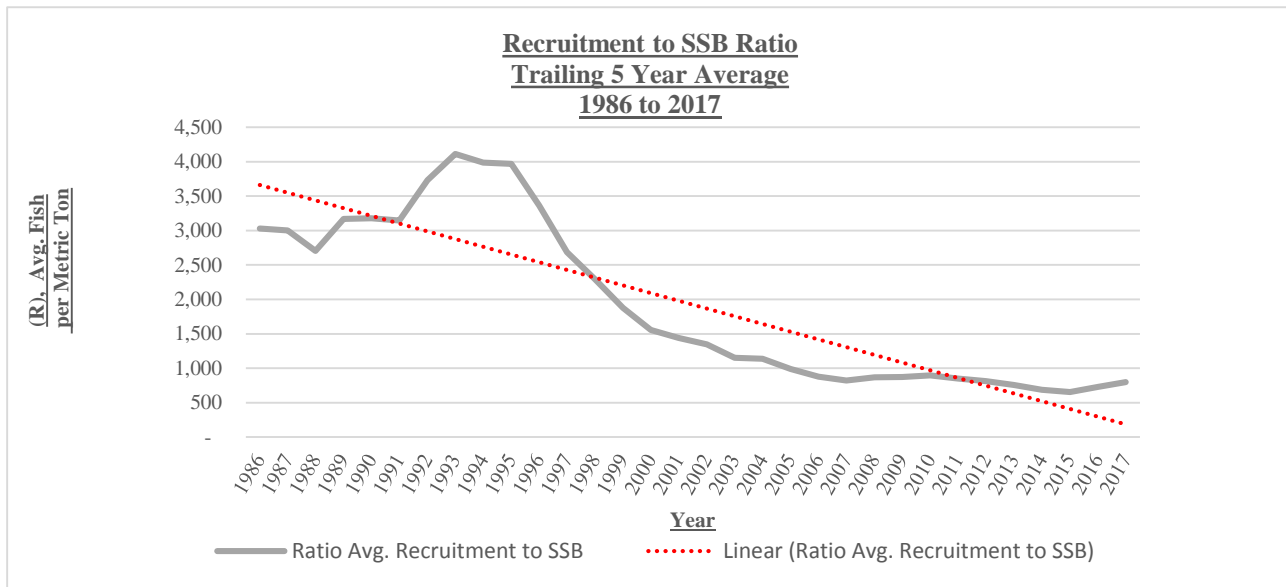
"What's compounded that...is...the commercial harvest...in the fall / winter months off shore" - That is a fishery that has been in place since the 1980's. Since its inception, biomass has experienced very large increases. You're correct there has been a winter / fall offshore fishery in place for years but there's four factors requiring consideration in your statement. First the fishery collapsed between 1980 and 1989 declining from an SSB of ~31,000 metric tons to ~7,000 over that period. Recruitment levels dropped from a high of ~102 million in 1983 to just over 12 million in 1988. Another potential indicator of the damage commercial harvest is having on the efficacy of the fall / winter spawn. Biomass jumped to record levels only when catch levels were cut in half in 1989, the primary driver of the biomass increase. Second, in the 80's and 90's, the fish being commercially harvested were age classes 1 to 2 representing a significantly lower percentage of sexually mature fish and a significantly reduced percentage of females than males harvested (reference Rutgers Sex and Length Study chart). Today the fish being harvested are primarily 3 to 6 yr. old classes, approximately 80% to 90% or more female and all sexually mature. Third, commercial discard rates from observed trawls experienced a material increase when older age groups started being harvested compared to percentages in the 90's. The above graph illustrates that and there's no reason to believe the same conditions don't exist today. **In the first decade of 2000, there's five years combined (2001, 2006, 2007, 2008 and 2009) which averaged ~100% DISCARD RATES TO TOTAL CATCH on observed trawls, an absolutely staggering statistic. 2007 alone is ~145%.** Fourth and notably in my opinion the most important, the biomass as stated in the 66th SAW is located in the most highly concentrated location on record. In 2018, areas 613, 616 and 537 accounted for 64% of the commercial catch. For the periods 1992 to 1999, 2000 to 2009 and 2010 to 2012, percentage catch from those three areas were 28%, 28% and 39% respectively. The biomass is highly concentrated and coupled with the fact ~75% of the commercial harvest occurs throughout the fall / winter season during the stock's spawn, you have to at minimum consider the potentially destructive consequences commercial harvest is having on reproduction. All the statistics and data point to a drop off in recruitment simultaneous with the harvest of older age classes, we may literally be regulating this fishery to a sterile SSB.

Summation:

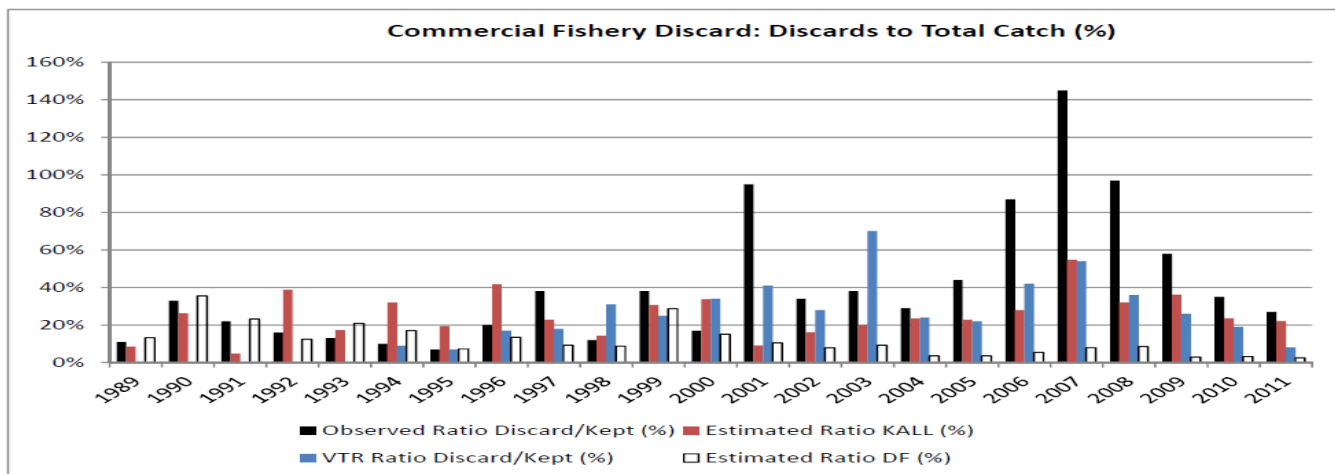


- Biomass declined between 1982 and 1989, result of catch averaging 115% of SSB, too high a percentage of the resource was being harvested resulting in an unsustainable fishery.
- Correct decision was made in 1989 to reduce catch by more than 50% which had an immediate and profoundly positive impact on the biomass, SSB and R. **PLEASE NOTE CATCH WAS DECREASED BY TONNAGE, SIZE LIMITS REMAINED UNCHANGED.** That point can't be emphasized enough. Recreational began a series of size increases in 1993 continuing through today resulting in a weighted average size limit between NJ, NY, Ct and RI of 18.82". Commercial on the other hand experienced a one-time size increase from 13" to 14" in 1997.
- Around 1996, landings of age classes 0 to 2 experienced sharp declines and landings of age classes 3 to 7 started making up larger percentages of annual catch, accelerating over the ensuing years. This marked the beginning of a change in catch composition within the fishery eventually leading to the downward trend we've experienced in all aspects of the fishery since 2003.
- Material change in catch composition led to a materially impaired SSB eroding the relative recruitment strength within the fishery. Recruitment, the single most important attribute of every healthy fishery, trending down over the last two decades is not an anomaly. It's the result of a

massive shift in the gender composition of SSB, the result of the over-harvest of female breeders due to size regulations recreationally and reduced catch quotas and higher market prices for larger fish commercially. Recruitment trends won't reverse until changes are made addressing the harvest of older age class fish. For any prognosticators who believes the stock is "steep" and recruitment will rebound on it's own merits, it won't. The below graph guarantees that. If it hasn't over the last ~35 years, why would we believe it will prospectively.



- The harvest of older age class fish have caused unprecedented levels of discard rates both recreationally and commercially. Recreationally due to size increases which caused a disparity of ~35 million less fish recreational anglers can harvest versus commercial concerns. Commercial due to their elective decision to harvest older age class breeders with greater market value. Remember these are discard rates on **OBSERVED** trawls, one can only imagine what the rates are on trips without observers on board. *Source is 57th SAW page 302.*



- For the period 1989 to 2003, combined landings averaged 16.5 million fish or 12,900 metric tons. For the years 2004 to 2017, landings averaged 10.6 million fish and 12,300 metric tons. A 35% decrease in fish landed translating to a 5.5% reduction in weight of fish landed (the result of larger older age class fish being harvested) and simultaneously as mentioned earlier recruitment, catch and SSB have decreased by 40%, 54% and 32% respectively while the overall biomass has decreased by 62 million fish or ~34% from 2004 through 2017. 62 million less fish in the biomass

with a 54% decrease in catch, another alarming statistic in this fishery. If these trends continue which they will based on current regulations, there won't be a fishery to manage in the not too distant future. The data supports that outcome, only thing that will change the stock's fortunes is someone acknowledging the data and making decisions to address the problems identified in this memorandum. Millions of recreational anglers and commercial operators are dependent on the later taking precedence.

- In order for this fishery to recover, we need to stop focusing on catch alone and start focusing on catch composition, size which equates to age and gender. Recreational size limits need to be changed back to 14" or at minimum a slot fish implemented as an interim measure phasing in reduced recreational size limits. The issue of commercial operators targeting older age class fish, a high percentage female breeders, during the fall / winter spawn **NEEDS TO BE ADDRESSED AND CHANGED**. This change in the fishery resulting in exponentially higher discard rates and significantly lower levels of recruitment relative to egg production is literally killing the fishery. The stock will never rebound unless preemptive measures are taken to protect the spawn, female breeders and the integrity of the recruitment strength of SSB in general.
- Data is revealing identifying relational changes in the fishery over the last four decades and reasons causing its decline and preventing its recovery. Lower levels of recruitment will be felt in the fishery for years and will continue until measures are implemented to protect breeders and the spawn in general. In its absence, the fishery will not only continue its decline but accelerate due to the recent 50% increase in commercial catch quota for 2019, 2020 and 2021. There's not one reason declining trends in the fishery since 2004 will correct themselves on their own merit without immediate changes to the regulations. The public is counting on the Commission and Council to acknowledge these facts and make the appropriate changes to begin the rebuilding process of this vital fishery. Blueprint already exists, it worked between 1989 and 2003 and there's no reason it wouldn't work today as long as catch composition is corrected. If not, other alternatives need to be considered and implemented. Recreational is the easier of the two, reduce size limits and catch composition and discard rates will correct themselves immediately. Commercial is more complicated but the harvest of older age class fish causing unprecedented levels of discards while disrupting the spawn of a highly concentrated biomass and destroying habitat in the process has to be addressed. If left unaddressed, the fishery will continue failing and defacto we'll be violating the provisions of MSA.
- MSA reauthorized in 2007 states the following:
 1. Acting to conserve fishery resources
 2. Providing for the implementation of fishery management plans (FMPs) which achieve optimal yield
 3. Establishing Regional Fishery Management Councils to steward fishery resources through the preparation, monitoring, and revising of plans which **(A) enable stake holders to participate in the administration of fisheries** and **(B) consider social and economic needs of states and**
 4. Protecting essential fish habitat.
- A biomass down 34% over the last 15 years with a failing recruitment trend is not conservation. Catch over that same period is down 54% so optimum yield I would argue is not being achieved. I consider myself a stakeholder in this fishery as do many others in the commercial, party boat, for-hire and recreational communities so I'm asking the Commission and Council to consider my analysis and conclusions based on marine fisheries data their own scientific community developed and make the necessary changes to correct the 15-yr decline of this vital fishery. Protecting the spawn and fish habitat is anything but what's occurring by allowing unabated harvest of a highly concentrated biomass, with 64% of the 2018 commercial quota coming during fall / winter months from areas 613, 616 and 537. My guess is that percentage will increase in 2019 with commercial operators being granted a 50% increase in catch quota. Changes in the fundamental management of this fishery are needed and the public is depending on the Commission and Council to make those changes. In the absence of a drastically different approach, the summer flounder fishery will continue its decline and eventually become a shadow of what it was in 2004.

In summary, changes in regulations (size recreationally and annual catch quotas commercially) have caused a seismic shift in catch composition over the last two decades leading to consequential damages to various attributes of the fishery, primarily a significant shift in gender composition, elevated levels of discard mortality and a declining recruitment trend. For recreational anglers, regulations mandate size fish harvested and they also guarantee significantly higher levels of discards. Recreational size increases have also caused **~35 MILLION fish or ~60% of the harvestable biomass (fish over 14" inches)** to be exclusively available for commercial harvest which is a tragically disparate allocation of the resource and a severe economic burden being shouldered solely by the recreational fishing community. Commercial operators on the other hand retained a 14" inch minimum size limit, have access to a significantly greater proportion of the biomass while making a conscious decision to harvest older age class fish for economic benefits creating unprecedented levels of discard rates in the process. Discard rates substantially higher than rates used in fishery management models in estimating commercial catch and determining catch quotas.

The result of the above is today's landings disproportionately consists of older class fish, primarily female breeders, which per the 66th SAW created a strong decrease in the female proportion of SSB. This gender imbalance coupled with higher discard rates referenced above has placed the fishery in a decline it can't recover from without management intervention. Reduced recruitment is a direct result of the above, started two decades ago and intensifying as recreational size limits increased and commercial harvest dynamics changed in the late nineties favoring larger breeders and predominantly sexually mature fish. The decision to maintain a 14" size minimum for commercial was the correct decision at the time but quickly became a moot point as the commercial harvest of younger age classes abruptly changed in the late nineties and represents a substantially lesser percentage of today's harvest. From 1989 to 1996, age classes 1 and 2 made up on average 85% of the annual commercial harvest, the same years SSB began an unprecedented 15-yr period of 900% growth. From 2010 to 2017, those classes made up on average 17% of the commercial harvest, an extraordinary change in commercial catch composition leading to a 33% decrease in SSB. Dynamics having disastrous effects on the gender and age composition of the biomass, associated discard rates and in strong likelihood the overall efficacy of the offshore spawn. All factors contributing to a steady decline in recruitment in turn causing a steady and prolonged decline in the fishery since 2004. In the late 80's after annual catch levels were adjusted and for most of the nineties, age classes 0 to 2 represented a majority of the recreational and commercial harvest and all other age classes by default, not by regulations, were largely left untouched. Older age sexually mature fish which perpetuated the future of the fishery. Today, age classes 3 through 6 comprise more than 80% of combined catch. By default, significantly elevated discard rates presumably consist of either 0 to 2 year age classes which are already at reduced levels due to poor recruitment statistics over the last decade or 7+ year classes with lower market values. **Age 0 to 2 year old fish accounted for 59 million fish of the biomass population in 1989 when the fishery for all practical purposes collapsed, 145 million fish in 1996, 146 million fish in 2004 and a mere 86 million in 2017.** That translates to a biomass population where every age class short of 7+ years is down moderately to substantially from 2009 to 2017 or a total reduction of 73 million fish representing a 38% decline in the population over that short period of time. A staggering statistic in itself, more so when you factor in catch levels both in tonnage and number of fish have been cut drastically over the same time frame. If we continue on the path we've been on for the last two decades, the fishery will continue declining. The data and trends guarantee it, those facts need to be acknowledged and remedial measures implemented to address the causes identified in this memorandum.

A MAJOR ALTERATION HAS OCCURRED IN THE FISHERY IN CATCH COMPOSITION CREATING AN EXTENSIVE DECREASE IN THE FEMALE COMPOSITION OF SSB AND A SIGNIFICANTLY HIGHER LEVEL OF DISCARD RATES CAUSING DECLINES IN ALMOST EVERY AGE CLASS. DECLINES RESULTING IN A PRONOUNCED DECLINE IN RECRUITMENT STATISTICS LEADING TO A SUBSTANTIALLY LOWER AND GENDER IMPAIRED BIOMASS. THIS YEAR'S 50% INCREASE IN COMMERCIAL QUOTA WILL ACCELERATE THOSE DECLINES. COUPLE THIS WITH 75% OF COMMERCIAL

HARVEST OCCURING DURING THE SPAWN WITH THE PRIME BREEDERS BEING HARVESTED AND THIS IS THE CYCLE THE FISHERY IS IN WHICH WILL CONTINUE AT AN ACCELERATED PACE UNTIL THE REGULATIONS ARE CORRECTED TO RESTORE THE BALANCE THAT EXISTED IN CATCH COMPOSITION (AGE CLASSES AND GENDER) IN THE 80'S AND 90'S. IN THE ABSENCE OF THOSE CHANGES, ANOTHER FISHERY WILL BE LOST CAUSING SIGNIFICANT ECONOMIC AND SOCIAL IMPACTS TO HUNDREDS OF THOUSANDS IF NOT MILLIONS OF PEOPLE AND BUSINESSES THROUGHOUT THE MID-ATLANTIC STATES. IT'S NOT A POSSIBILITY, IT'S A GUARANTEE AS TREND ANALYSIS DOESN'T LIE UNLESS OF COURSE THE DATA WE'RE USING IS WRONG WHICH WE'RE BEING TOLD IS BEST AVAILABLE AND BEING USED EITHER WAY IN SETTING POLICY DECISIONS.

I implore the people copied on this email to put your political, philosophical, personal and lobbyist agendas aside to address the issues raised in this analysis to save the fishery before it's unsavable. We've all witnessed too many fisheries disappear in our lifetimes, we don't need another one as vital as summer flounder on our conscience. I'm appealing to your hard work and sense of judgment to acknowledge the above trends as real and make the hard decisions to reverse the fortunes of this vital fishery. SSB once grew by 900%, there's no reason it can't again but changes in how the fishery is being managed have to be made.