MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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MEMORANDUM

Date: July 25, 2012

To: Chris Moore, Executive Director

From: Kiley Dancy

Subject: Scup Allocation Analysis Report Summary

The following is a summary of the Scup Allocation Analysis conducted by Gentner Consulting Group, as presented in their July 2012 final report.

Introduction and Rationale for Analysis

The scup stock was declared rebuilt in 2009 after a decade of management under a rebuilding plan. Since that time, scup biomass has been estimated to be very high relative to target levels. In light of this trend, recreational and commercial harvesters have encouraged fishery managers to re-examine current scup allocations. Specifically, recreational anglers would like to see an increase in allocation to the recreational sector, and some commercial fishermen feel that it would be appropriate to re-distribute commercial quota among commercial seasons.

Currently, the total harvest of scup is split between the recreational sector (22%) and the commercial sector (78%). Before the allowable harvest of scup was significantly increased in 2011, tight regulations meant that the recreational sector was regularly exceeding their harvest limits, while the commercial sector was often falling short of catching the commercial quota. Thus, many have argued that transferring scup allocation from the commercial sector to the recreational sector would be justified.

The commercial quota for scup is currently divided among three seasons, with 45.11% allocated to the Winter I season (January to April), 38.95% to the Summer season (May to October), and the remaining 15.94% to the Winter II season (November and December). Any unused allocation from Winter I rolls over into Winter II. This seasonal allocation was intended to distribute catch between different types of vessels fishing for scup at different times of the year.

Objectives and Methods

The purpose of this analysis was to examine the economic efficiency of the current allocations and the potential effects of shifts in these allocations. GCG estimated commercial production functions using economic data from the otter trawl fishery, which accounts for the majority of commercial scup landings. For the recreational fishery, the National Marine Fisheries Service (NMFS) used a bioeconomic model to analyze economic efficiency.

The economic efficiency of allocations between sectors was examined by modeling the effects of small allocation shifts from the commercial to the recreational sector and vice versa. In the analysis, the entire benefits schedule was not derived to find the optimal allocation; rather, shifts of 3%, 6%, and 9% from one sector to the other were considered. Shifts larger than 9% were not considered because the results become increasingly unreliable as modeled conditions move further away from current allocations. The efficiency of commercial seasonal allocations was examined in a similar manner, by combining the two winter seasons and analyzing shifts in allocation of 3%, 6%, and 9% between summer and winter periods.

Results and Conclusions

The report indicates that due to the recent, large increases in the allowable harvest of scup, neither the recreational nor the commercial fishery is currently constrained by the harvest limits or quotas. As a result, the model could not get the new higher catch limits to constrain either the recreational or the commercial harvest. As such, there was no positive willingness to pay for additional allocation of scup to either fishery.

However, the analysis indicates total net benefits could increase if recreational regulations were relaxed and coastwide regulations were a 9" minimum size limit, 50 fish per day bag limit, and no closed season. The 9" size limit was considered by Council staff to be the lower limit of what would be a biologically sound size limit for the recreational fishery. The report indicates that these liberalized regulations would require less than a 1% increase in the harvest limit for the recreational sector and could result in increased recreational effort that may lead to positive net benefits.

In regard to the commercial fishery, the report concludes that the current seasonal allocations are inefficient. Although the objective of the study was not to identify the optimal allocation, the results indicate that economic efficiency would increase by transferring commercial quota (as much as 9%) from the winter to the summer season.

Finally, the report notes that although the investigators were unable to determine the efficiency of the current allocations between the commercial and recreational fisheries, the combined analyses they developed are a flexible and robust framework that will allow for the examination of allocation under future harvest limits that may be more constraining. They note that this framework will be more useful for examining limits that are closer to the average harvest that occurred prior to 2011 and conclude that as allocations constrain harvest, the economic allocations of these resources will become more critical.

Scup Allocation Analysis

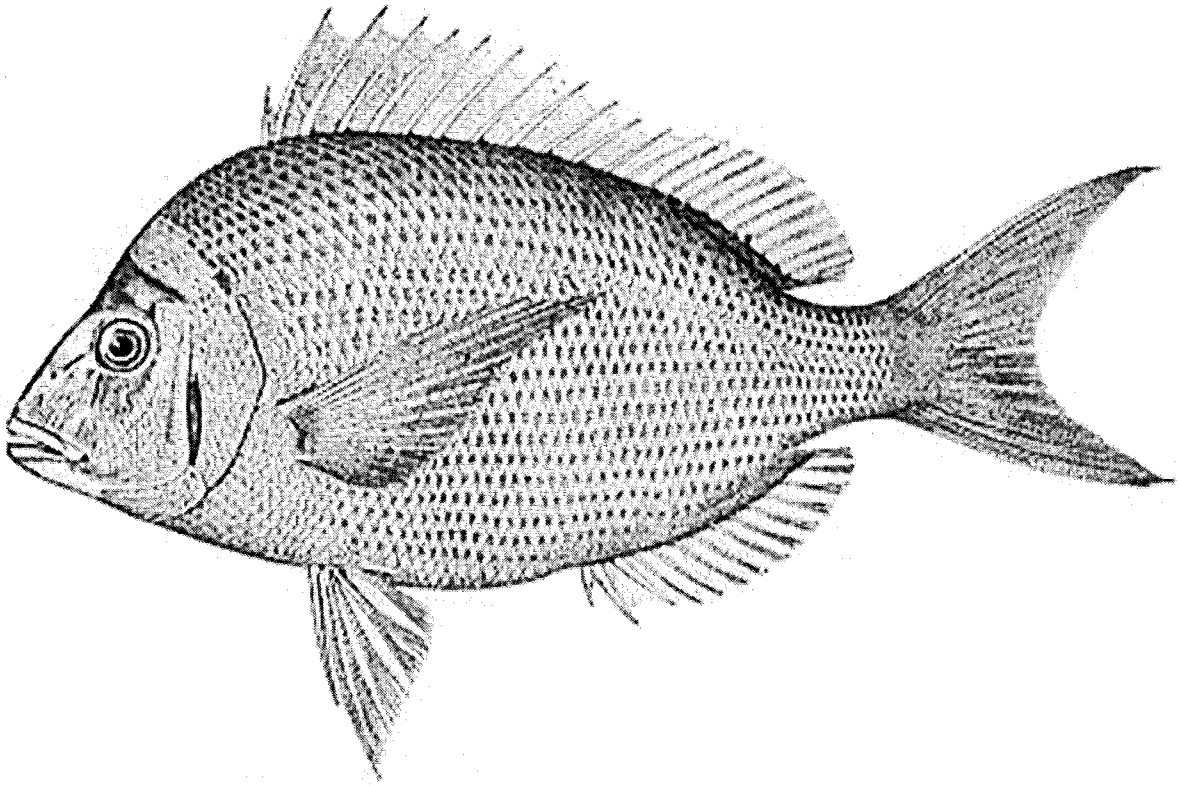

Photo Credit: National Marine Fisheries Service

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Overall, it is impossible to determine the efficiency of the current allocation given the sharp rise in recent harvest limits and the inability of either sector to catch their 2011 limits. However the results show that relaxing recreational regulations would increase the aggregate value in this fishery and that relaxing regulations to their biological limit would maximize value. Relaxing regulations to the maximum extent advisable, based on biological advice, would draw more fishing effort into the fishery and could require as much as a 1% allocation shift from the commercial sector to the recreational sector. This change should be palatable for the council and commercial fishermen as the commercial sector left 26% of their harvest limit in the water in 2011.

The scup stock was under a rebuilding plan from 1999 until it was declared rebuilt in 2009. The rebuilding was so successful that the Mid-Atlantic Fishery Management Council (MAFMC) increased the allowable harvest in 2012 to over twice the 2010 limit. Currently, recreational anglers faced some of the tightest scup regulations the sector has ever faced and, before the 2011 increase, were regularly exceeding their harvest limits. Anglers also face extremely tight regulations in many Northeast fisheries and would like to see a loosening of regulations in scup. The new higher limit should allow for liberalizing recreational regulations. On the other side of the coin scup prices are weak and there is anecdotal evidence of seasonal market gluts that can drive commercial prices very low. As a result of these conditions in the fishery, the MAFMC asked for this examination of the economic efficiency of current allocations.

Currently the recreational fishery is allowed 22% of the total harvest. Additionally, to protect smaller inshore commercial boats, the 78% commercial allocation is broken into Winter I, Summer and Winter II seasons, with any uncaught allocation from Winter I rolling over into Winter II. This report details the examination of the allocation of harvests between commercial and recreational sectors and also the allocation between commercial seasons. The efficiency of these sectoral and seasonal allocations were examined using the economic value generated by each sector and across seasons.

Gentner Consulting Group, Inc. estimated commercial production functions based on the otter trawl gear used to catch the vast majority of scup landings. While it would have been ideal to estimate value for other gear types, data limitations prevented estimation of marginal or aggregate value in any other gear type. As a result, if the other gears have different revenue or cost structures, they would have different marginal and aggregate values for scup harvest; however, these gears are responsible for a small amount of total harvest. Consumer surplus for scup was calculated using a synthetic inverse demand function and attempts were made to estimate a for-hire sector production function. However, due to data limitations, for-hire economic profit per trip was calculated arithmetically. Finally, the National Marine Fisheries Service estimated a bioeconomic model of the recreational scup fishery and their valuation estimates were used for this examination.

A suite of allocation changes, rather than the optimal allocation, were analyzed including; +6% commercial/-6% recreational, +3% commercial/-3% recreational, status quo, -3% commercial/+3% recreational, -6% commercial/+6% recreational and -9% commercial/+9% recreational. Optimal allocations were not examined for two reasons. One, NMFS economist responsible for the recreational bioeconomic model felt that it would be inappropriate to examine allocations beyond a certain range around the current allocation. Two, the NMFS recreational bioeconomic model was computationally intensive and it would take too much time to simulate all allocation levels.

Total net benefits are potentially maximized by allocating more fish to the recreational sector. However, there are various caveats to this conclusion. Under a 29.96 million pound harvest, the limit selected for this analysis, the recreational allocation does not bind nor does the commercial allocation bind. A harvest limit this high represents more than a doubling of the allowable harvest and all simulations to develop marginal willingness to pay for allocation estimates are made well outside the catch levels used to develop the models. 2011 harvests were not available when these models were formulated, but under the higher harvest limits in 2011 neither the recreational sector nor the commercial sector caught their allocations. Across all three commercial seasons, the commercial sector only caught 74% of their allocation while the recreational sector only caught 64% of their allocation. The non-binding harvest limit in 2011 was 26.1 million pounds, which is lower than the 29.96 million pound harvest limit used for this analysis. When allocations are not binding, there cannot be positive valuations for increases in allocations. As a result, it is impossible to determine if the current allocation percentages under a 29.96 million pound harvest limit are efficient or not.

On the recreational side, the NMFS recreational bioeconomic model could not show a positive willingness to pay for increases in quota because the new increased quota was far outside the level of recreational catch during the year of the special data collection used for this model or, for that matter, any year in recent history. That is, under the new, higher catch limit and existing tight regulations, modeled anglers could not catch what will be the new quota and therefore would not be willing to pay for more fish. At the same time, the NMFS bioeconomic model found that if additional allocation were coupled with liberalization of recreational regulations that recreational effort would increase. Increases in effort at the same willingness to pay increase aggregate value.

Total aggregate benefits are maximized when the recreational sector has a 9" minimum size limit and a 50 fish bag limit. To achieve this level of liberalization, less than 1% of the total harvest limit would need to be transferred to the recreational sector. Council staff feels that a 9" minimum size limit is the lowest biological sustainable minimum size. Harvesting fish any smaller creates a risk of recruitment overfishing or catching scup before they have had their first chance to spawn. Reinforcing this conclusion, the NMFS model did find a negative marginal willingness to pay for allocation reductions leading to the conclusion that reducing recreational allocations would certainly produce lower net benefits than the status quo. Recreational aggregate net benefits were found to be higher than commercial plus consumer benefits in all scenarios examined, even if the for-hire economic profit estimates are ignored.

A positive marginal willingness to pay for recreational scup catch may exist in reality, however the recreational model employed does not allow for changing catch rates that would result from increased recreational allocations that were not harvested in a given year. That is, if recreational harvests increased, but did not bind, the additional fish that were not harvested would grow larger and spawn one more time, increasing catch rates. Other research has shown that thicker stocks do generate positive willingness to pay. Recreational anglers have preferences for catch and catch rates above and beyond harvest and harvest rates that are not captured in this model.

On the commercial side, the simulation forced the commercial sector to harvest the entire increased allocation producing a small marginal willingness to pay for allocation increases. However, if modeled in a bioeconomic framework the higher harvest limits would not bind the commercial sector either as shown by the sector not harvesting their allocation in 2011. Additionally, because scup is caught in joint production with other, more valuable species that are also heavily regulated, it might be difficult to increase scup commercial allocation if limits on these other groundfish species bind catch of scup. Also, low prices during seasonal market gluts may keep the commercial sector from achieving its harvest limit.

The analysis of seasonal allocations indicate those allocations are inefficient. This analysis did not look for the efficiency maximizing allocation, but instead examined increases and decreases up to 9%. Winter I and Winter II were combined because of lack of separate model reliability and because all uncaught Winter I quota rolls over into Winter II. This analysis showed that economic value would be increased by moving allocation out of the winter seasons and in to the summer season and that moving as much as 9% more to the Summer season would provide more benefits than the status quo.

Finally, while this effort was unable to determine the efficiency of the current allocation or the efficiency maximizing allocation, this effort has created a flexible and robust framework that will allow the examination of other harvest limits as they change. It is expected that harvest limits will be reduced from their high 2011 levels and this framework will be far more useful in examining harvest limits that lie closer to the average harvest limits across the years used in the construction of these models. As allocations bind harvest, the economic allocation of these resources will become more critical.