MID-ATLANTIC FISHERY MANAGEMENT COUNCIL
MEETING AGENDA
October 7-10, 2013
Courtyard Philadelphia Downtown, 21 N. Juniper Street
Philadelphia, PA 19107-1901
Telephone 215-496-3200

Monday, October 7

10:30 a.m. - 12:30 p.m. **Executive Committee [Tab 1]**
Robins, Anderson, Batsavage, Bullard, Elliott, King, Linhard, Luisi, McMurray, Nolan, O'Reilly, Pate [Moore]
- Review and revise Implementation Plan

12:30 p.m. - 1:30 p.m. **Lunch**

1:30 p.m. - 5:00 p.m. **Mackerel, Squid, Butterfish Committee [Tab 2]**
King, McMurray, Anderson, Beal, DiLernia, Heins, Himchak, Kaelin, Linhard, Michels, Nolan, Pate, Young, Zeman; NE Reps: Pierce, Tooley [Didden]
- Develop Committee recommendations on river herring and/or shad management approach (stock in fishery or other)

Tuesday, October 8

9:00 a.m. **Council Convenes**

9:00 a.m. - 10:30 a.m. **Joint Spiny Dogfish Committee (Committee of the Whole) [Tab 3]**
- Review SSC, Dogfish Monitoring Committee, and Advisory Panel recommendations regarding 2014 harvest levels and associated management measures
- Adopt recommendations for 2014 harvest levels and associated management measures

10:30 a.m. - 11:30 a.m. **Framework 8 to the Monkfish FMP [Tab 4]**
- Review the range of alternatives; consider approval of alternatives for further analysis; measures include the specification of an annual catch target, days-at-sea, and trip limits for 2014-2016, and changes to the permit Category H boundary

11:30 a.m. - 12:00 p.m. **Bluefin Tuna Presentation - Tom Warren, HMS NMFS [Tab 5]**
- Overview of Amendment 7 proposed rule

12:00 p.m. - 1:00 p.m. **Lunch**

1:00 p.m. - 3:30 p.m. **Mackerel, Squid, Butterfish [Tab 2]**

- Review Committee recommendations regarding river herring/shad management
- Adopt a management approach for river herring/shad

3:30 p.m. - 4:30 p.m. **SAW/SARC 57 Summary - Jim Weinberg, NEFSC [Tab 6]**

- Benchmark Assessment review of summer flounder and striped bass

4:30 p.m. - 5:00 p.m. **Update on the Atlantic Wind Connection Project - Kris Ohleth, Atlantic Wind Connection**

5:00 p.m. - 6:00 p.m. **Listening Session - Beth Phelan, NOAA [Tab 7]**

- Presentation on Ocean Acidification

Wednesday, October 9

9:00 a.m. **Demersal Committee Meeting as a Committee of the Whole with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, Black Sea Bass, and Bluefish Boards**

9:00 a.m. - 11:00 a.m. **Finalize Summer Flounder Management Measures in conjunction with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Board [Tab 8]**

- Review SSC, Summer Flounder Monitoring Committee, and Advisory Panel recommendations for 2014-2015
- Adopt recommendations for 2014-2015 commercial and recreational harvest levels and commercial management measures
- Update on AFMSC activities regarding summer flounder

11:00 a.m. - 12:30 p.m. **Finalize Scup Management Measures in conjunction with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Board [Tab 9]**

- Review SSC, Scup Monitoring Committee, and Advisory Panel recommendations for 2014-2015
- Adopt recommendations for 2014-2015 commercial and recreational harvest levels and commercial management measures

12:30 p.m. - 1:30 p.m. **Lunch**

1:30 p.m. - 3:00 p.m. **Finalize Black Sea Bass Management Measures in conjunction with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Board [Tab 10]**

- Review SSC, Black Sea Bass Monitoring Committee, and Advisory Panel recommendations for 2014-2015
- Adopt recommendations for 2014-2015 commercial and recreational harvest levels and commercial management measures

3:00 p.m. - 4:30 p.m. **Finalize Bluefish Management Measure in conjunction with the Atlantic States Marine Fisheries Commission's Bluefish Board [Tab 11]**

- Review SSC, Bluefish Monitoring Committee, and Advisory Panel recommendations regarding 2014 harvest levels and associated management measures
- Adopt recommendations for 2014 harvest levels and associated management measures
- ASMFC approval of the 2013 Fishery Management Plan Review and the Terms of Reference for the Bluefish stock assessment

4:30 p.m. - 5:30 p.m. **Research Set-Aside Research Priorities [Tab 12]**

- Establish Research Priorities for 2015 RSA RFP

Thursday, October 10

9:00 a.m. - 10:00 a.m. **Final Rule for National Standard 2 Guidelines Presentation - Jim Weinberg, NEFSC [Tab 13]**

10:00 a.m. - 1:00 p.m. **Business Session**

- Approve June and August 2013 minutes

Strategic Plan

Move to add 13.5. Seek legislative solutions to expand observer funding options.
McMurray/Anderson 18/0/1
Motion carries

In section 12.1 add "work with our management partners to secure long term funding for the NEAMAP survey."
Anderson/McMurray
Moved by consent

Move to approve plan Strategic Plan as modified.
Anderson/Linhard (18/0/0)
Motion carries

Deep Sea Corals

Move that the Council approve the range of alternatives with additions for public hearings.
Elliott for Committee

Move to table Committee motion to approve the alternatives with additions until additional options are explored.
Himchak/Linhard
Moved by consent

Move to add 2H to exempt Illex and Loligo from broad zone restrictions.
Nolan/Himchak (20/0)
Motion carries

Move to add alternative 3B-3 adding options for landward boundary lines following the 200m, 300m, 400m and 500m depth contours, and following the original boundaries on the seaward side.
Deem/Kaelin (18/0/0)
Motion carries

Move to add for consideration the potential requirement of gear monitoring electronics as a condition for exemption to fish in either broad or discrete coral zones.
Darcy/McMurray (19/0/0)
Motion carries

Move to un-table previously tabled motion.
Himchak/Linhard (18/0/0)
Motion carries

Move to approve the range of alternative with additions for public hearings
Elliott for Committee (19/0/0)
Motion carries

Surfclam & Ocean Quahog

Move that Amendment 17, the Cost Recovery Amendment, be changed to include the BRP issue and the OY range issue.
Anderson/Himchak (16/0/0)
Motion carries

Move to re-scope Amendment 17 to make the public aware of any changes and form a new FMAT.
Anderson/Linhard (17/0/0)
Motion carries

RSA
Move in 2015, RFP for RSA will indicate intent to maintain NEAMAP as top priority project. Other projects may be funded depending on available resources.
Heins for Committee (14/2/1)
Motion carries

Continuing & New Business
Move to nominate Olaf Jensen to the SSC.
Anderson/Zeman
Moved by consent

Move to nominate Tom Noji to the SSC.
Bullard/Linhard
Moved by consent

Organizational Reports

- NMFS Regional Administrator
  - Update on forms and process for data collection for the surfclam and ocean quahog fisheries
  - Industry-funded observer coverage
- NMFS NEFSC Director
- NOAA Office of General Counsel
- Federal Enforcement Officials (NMFS and USCG)
- ASMFC Executive Director

Liaison Reports

- South Atlantic Council (September 16-20, 2013)
- New England Council

Executive Director's Report - Chris Moore [Tab 14]

Science Report - Rich Seagraves [Tab 15]

Committee Reports

- Executive Committee
- Mackerel, Squid, Butterfish

Continuing and New Business

The above agenda items may not be taken in the order in which they appear and are subject to change as necessary. Other items may be added, but the Council cannot take action on such items even if the item requires emergency action without additional public notice. Non-emergency matters not contained in this agenda may come before the Council and / or its Committees for discussion, but these matters may not be the subject of formal Council or Committee action during this meeting. Council and Committee actions will be restricted to the issues specifically listed in this agenda. Any issues requiring emergency action under section 305(c) of the Magnuson-Stevens Act that arise after publication of the Federal Register Notice for this meeting may be acted upon provided that the public has been notified of the Council's intent to take final action to address the emergency. The meeting may be closed to discuss employment or other internal administrative matters.

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 26, 2013

To: Chris Moore, Executive Director

From: Jessica Coakley, Staff

Subject: Stock Assessment Workshop and Review Panel Reports

The 57th Stock Assessment Workshop (SAW) occurred on July 23-26 and reviewed the summer flounder and striped bass assessments.

The Stock Assessment Review Panel (SARC) was chaired by Dr. Cynthia M. Jones from the MAFMC SSC and Old Dominion University Center for Quantitative Fisheries Ecology, and three scientists appointed by the Center for Independent Experts:

- Dr. Robin Cook - Senior Research Fellow, MASTS Population Modeling Group, University of Strathclyde, Glasgow
- Dr. Henrik Sparholt - Deputy Head of Advisory Department, ICES Secretariat
- Mr. John Simmonds - Vice Chair of the ICES advisory committee dealing the provision of fisheries advice

The SAW 57 Assessment Summary Report for 2013, Full SAW 57 Assessment Report, SARC 57 Panel Summary and individual reviewer reports can be found on the October 2013 briefing book page on the Council's website, at http://www.mafmc.org/briefing/october-2013

Northeast Fisheries Science Center Reference Document 13-14

A Report of the 57th Northeast Regional Stock Assessment Workshop

57th Northeast Regional Stock Assessment Workshop (57th SAW) Assessment Summary Report

by Northeast Fisheries Science Center

NOAA's National Marine Fisheries Serv., 166 Water St., Woods Hole MA 02543

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

August 2013

Northeast Fisheries Science Center Reference Documents

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Information Quality Act Compliance: In accordance with section 515 of Public Law 106-554, the Northeast Fisheries Science Center completed both technical and policy reviews for this report. These predissemination reviews are on file at the NEFSC Editorial Office.

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SAW-57 ASSESSMENT SUMMARY REPORT

Introduction

The 57th SAW Assessment Summary Report contains summary and detailed technical information on two stock assessments reviewed during July 23-26, 2013 at the Stock Assessment Workshop (SAW) by the 57th Stock Assessment Review Committee (SARC-57): summer flounder (*Paralichthys dentata*) and striped bass (*Morone saxatilis*). The SARC-57 consisted of 3 external, independent reviewers appointed by the Center for Independent Experts [CIE], and an external SARC chairman from the MAFMC SSC. The SARC evaluated whether each Term of Reference (listed in the Appendix) was completed successfully based on whether the work provided a scientifically credible basis for developing fishery management advice. The reviewers' reports for SAW/SARC-57 are available at website: http://www.nefsc.noaa.gov/nefsc/saw/ under the heading "SARC 57 Panelist Reports".

An important aspect of any assessment is the determination of current stock status. The status of the stock relates to both the rate of removal of fish from the population – the exploitation rate – and the current stock size. The exploitation rate is the proportion of the stock alive at the beginning of the year that is caught during the year. When that proportion exceeds the amount specified in an overfishing definition, overfishing is occurring. Fishery removal rates are usually expressed in terms of the instantaneous fishing mortality rate, F, and the maximum removal rate is denoted as $F_{THRESHOLD.}$

Another important factor for classifying the status of a resource is the current stock level, for example, spawning stock biomass (SSB) or total stock biomass (TSB). Overfishing definitions, therefore, characteristically include specification of a minimum biomass threshold as well as a maximum fishing threshold. If the biomass of a stock falls below the biomass threshold ($B_{THRESHOLD}$) the stock is in an overfished condition. The Sustainable Fisheries Act mandates that a stock rebuilding plan be developed should this situation arise.

As there are two dimensions to stock status – the rate of removal and the biomass level – it is possible that a stock not currently subject to overfishing in terms of exploitation rates is in an overfished condition, that is, has a biomass level less than the threshold level. This may be due to heavy exploitation in the past, or a result of other factors such as unfavorable environmental conditions. In this case, future recruitment to the stock is very important and the probability of improvement may increase greatly by increasing the stock size. Conversely, fishing down a stock that is at a high biomass level should generally increase the long-term sustainable yield. Stocks under federal jurisdiction are managed on the basis of maximum sustainable yield (MSY). The biomass that produces this yield is called B_{MSY} and the fishing mortality rate that produces MSY is called F_{MSY}.

Given this, federally managed stocks under review are classified with respect to current overfishing definitions. A stock is overfished if its current biomass is below $B_{THRESHOLD}$ and overfishing is occurring if current F is greater than $F_{THRESHOLD.}$ The table below depicts status criteria.

		BIOMASS		
		$B < B_{THRESHOLD}$	$B_{THRESHOLD} < B < B_{MSY}$	$B > B_{MSY}$
EXPLOITATION RATE	$F > F_{THRESHOLD}$	Overfished,overfishing is occurring; reduce F, adopt and follow rebuilding plan	Not overfished, overfishing is occurring; reduce F, rebuild stock	$F = F_{TARGET} <= F_{MSY}$
	$F < F_{THRESHOLD}$	Overfished, overfishing is not occurring; adopt and follow rebuilding plan	Not overfished, overfishing is not occurring; rebuild stock	$F = F_{TARGET} <= F_{MSY}$

Fisheries management may take into account scientific and management uncertainty, and overfishing guidelines often include a control rule in the overfishing definition. Generically, the control rules suggest actions at various levels of stock biomass and incorporate an assessment of risk, in that F targets are set so as to avoid exceeding F thresholds.

Outcome of Stock Assessment Review Meeting

Text in this section is based on SARC-57 Review Panel reports (available at http://www.nefsc.noaa.gov/nefsc/saw/ under the heading "SARC-57 Panelist Reports").

Regarding **summer flounder**, all eight of the stock assessment Terms of Reference (TORs) were met. The stock is neither overfished nor experiencing overfishing in 2012. Fishing mortality has decreased since 1997, and is below the new F_{MSY} proxy. SSB in 2012 was 82% of the biomass target. The population was modeled with ASAP, a forward projecting age-structured model. A variety of fishery-independent and fishery-dependent surveys were available to characterize the stock. Annual projections were provided for 3 years with no retrospective adjustment.

Regarding **striped bass**, six of the seven stock assessment TORs were met and one TOR which dealt with Biological Reference Points was partly completed. The stock is not overfished and overfishing is not occurring. A variety of fishery-independent and fishery-dependent surveys were available to characterize the stock. The present assessment uses a statistical catch-at-age (SCA) model to estimate F, recruitment, total abundance and stock biomass. There was a slight retrospective pattern. The SARC Panel encourages development of a sex-disaggregated model. Management of striped bass has a long history and ad hoc reference points, such as SSB_{1995}.

SARC-57 concluded that each of the assessments (**summer flounder** and **striped bass**) was effective in delineating stock status, determining BRPs and proxies, and in projecting probable short-term trends in stock biomass, fishing mortality, and catches.

Glossary

ADAPT. A commonly used form of computer program used to optimally fit a Virtual Population Assessment (VPA) to abundance data.

ASAP. The Age Structured Assessment Program is an age-structured model that uses forward computations assuming separability of fishing mortality into year and age components to estimate population sizes given observed catches, catch-at-age, and indices of abundance. Discards can be treated explicitly. The separability assumption is relaxed by allowing for fleet-specific computations and by allowing the selectivity at age to change smoothly over time or in blocks of years. The software can also allow the catchability associated with each abundance index to vary smoothly with time. The problem's dimensions (number of ages, years, fleets and abundance indices) are defined at input and limited by hardware only. The input is arranged assuming data is available for most years, but missing years are allowed. The model currently does not allow use of length data nor indices of survival rates. Diagnostics include index fits, residuals in catch and catch-at-age, and effective sample size calculations. Weights are input for different components of the objective function and allow for relatively simple age-structured production model type models up to fully parameterized models.

ASPM. Age-structured production models, also known as statistical catch-at-age (SCAA) models, are a technique of stock assessment that integrate fishery catch and fishery-independent sampling information. The procedures are flexible, allowing for uncertainty in the absolute magnitudes of catches as part of the estimation. Unlike virtual population analysis (VPA) that tracks the cumulative catches of various year classes as they age, ASPM is a forward projection simulation of the exploited population. ASPM is similar to the NOAA Fishery Toolbox applications ASAP (Age Structured Assessment Program) and SS2 (Stock Synthesis 2)

Availability. Refers to the distribution of fish of different ages or sizes relative to that taken in the fishery.

Biological reference points. Specific values for the variables that describe the state of a fishery system which are used to evaluate its status. Reference points are most often specified in terms of fishing mortality rate and/or spawning stock biomass. The reference points may indicate 1) a desired state of the fishery, such as a fishing mortality rate that will achieve a high level of sustainable yield, or 2) a state of the fishery that should be avoided, such as a high fishing mortality rate which risks a stock collapse and long-term loss of potential yield. The former type of reference points are referred to as "target reference points" and the latter are referred to as "limit reference points" or "thresholds". Some common examples of reference points are $F_{0.1}$, F_{MAX}, and F_{MSY}, which are defined later in this glossary.

B_0. Virgin stock biomass, i.e., the long-term average biomass value expected in the absence of fishing mortality.

B_{MSY}. Long-term average biomass that would be achieved if fishing at a constant fishing mortality rate equal to F_{MSY}.

Biomass Dynamics Model. A simple stock assessment model that tracks changes in stock using assumptions about growth and can be tuned to abundance data such as commercial catch rates, research survey trends or biomass estimates.

Catchability. Proportion of the stock removed by one unit of effective fishing effort (typically age-specific due to differences in selectivity and availability by age).

Control Rule. Describes a plan for pre-agreed management actions as a function of variables related to the status of the stock. For example, a control rule can specify how F or yield should vary with biomass. In the National Standard Guidelines (NSG), the "MSY control rule" is used to determine the limit fishing mortality, or Maximum Fishing Mortality Threshold (MFMT). Control rules are also known as "decision rules" or "harvest control laws."

Catch per Unit of Effort (CPUE). Measures the relative success of fishing operations, but also can be used as a proxy for relative abundance based on the assumption that CPUE is linearly related to stock size. The use of CPUE that has not been properly standardized for temporal-spatial changes in catchability should be avoided.

Exploitation pattern. The fishing mortality on each age (or group of adjacent ages) of a stock relative to the highest mortality on any age. The exploitation pattern is expressed as a series of values ranging from 0.0 to 1.0. The pattern is referred to as "flat-topped" when the values for all the oldest ages are about 1.0, and "dome-shaped" when the values for some intermediate ages are about 1.0 and those for the oldest ages are significantly lower. This pattern often varies by type of fishing gear, area, and seasonal distribution of fishing, and the growth and migration of the fish. The pattern can be changed by modifications to fishing gear, for example, increasing mesh or hook size, or by changing the proportion of harvest by gear type.

Mortality rates. Populations of animals decline exponentially. This means that the number of animals that die in an "instant" is at all times proportional to the number present. The decline is defined by survival curves such as: $N_{t+1} = N_t e^{-z}$

where N_t is the number of animals in the population at time t and N_{t+1} is the number present in the next time period; Z is the total instantaneous mortality rate which can be separated into deaths due to fishing (fishing mortality or F) and deaths due to all other causes (natural mortality or M) and e is the base of the natural logarithm (2.71828).To better understand the concept of an instantaneous mortality rate, consider the following example. Suppose the instantaneous total mortality rate is 2 (i.e., Z = 2) and we want to know how many animals out of an initial population of 1 million fish will be alive at the end of one year. If the year is apportioned into 365 days (that is, the 'instant' of time is one day), then 2/365 or 0.548% of the population will die each day. On the first day of the year, 5,480 fish will die (1,000,000 x 0.00548), leaving 994,520 alive. On day 2, another 5,450 fish die (994,520 x 0.00548) leaving 989,070 alive. At the end of the year, 134,593 fish $[1{,}000{,}000 \times (1 - 0.00548)^{365}]$ remain alive. If, we had instead selected a smaller 'instant' of time, say an hour, 0.0228% of the population would have died by the end of the first time interval (an hour), leaving 135,304 fish alive at the end of the year $[1{,}000{,}000 \times (1 - 0.00228)^{8760}]$. As the instant of time becomes shorter and shorter, the exact answer to the number of animals surviving is given by the survival curve mentioned above, or, in this example:

$N_{t+1} = 1{,}000{,}000e^{-2} = 135{,}335$ fish

Exploitation rate. The proportion of a population alive at the beginning of the year that is caught during the year. That is, if 1 million fish were alive on January 1 and 200,000 were caught during the year, the

exploitation rate is 0.20 (200,000 / 1,000,000) or 20%.

F_{MAX}. The rate of fishing mortality that produces the maximum level of yield per recruit. This is the point beyond which growth overfishing begins.

$F_{0.1}$. The fishing mortality rate where the increase in yield per recruit for an increase in a unit of effort is only 10% of the yield per recruit produced by the first unit of effort on the unexploited stock (i.e., the slope of the yield-per-recruit curve for the $F_{0.1}$ rate is only one-tenth the slope of the curve at its origin).

$F_{10\%}$. The fishing mortality rate which reduces the spawning stock biomass per recruit (SSB/R) to 10% of the amount present in the absence of fishing. More generally, Fx%, is the fishing mortality rate that reduces the SSB/R to x% of the level that would exist in the absence of fishing.

F_{MSY}. The fishing mortality rate that produces the maximum sustainable yield.

Fishery Management Plan (FMP). Plan containing conservation and management measures for fishery resources, and other provisions required by the MSFCMA, developed by Fishery Management Councils or the Secretary of Commerce.

Generation Time. In the context of the National Standard Guidelines, generation time is a measure of the time required for a female to produce a reproductively-active female offspring for use in setting maximum allowable rebuilding time periods.

Growth overfishing. The situation existing when the rate of fishing mortality is above F_{MAX} and when fish are harvested before they reach their growth potential.

Limit Reference Points. Benchmarks used to indicate when harvests should be constrained substantially so that the stock remains within safe biological limits. The probability of exceeding limits should be low. In the National Standard Guidelines, limits are referred to as thresholds. In much of the international literature (e.g., FAO documents), "thresholds" are used as buffer points that signal when a limit is being approached.

Landings per Unit of Effort (LPUE). Analogous to CPUE and measures the relative success of fishing operations, but is also sometimes used a proxy for relative abundance based on the assumption that CPUE is linearly related to stock size.

MSFCMA. (Magnuson-Stevens Fishery Conservation and Management Act). U.S. Public Law 94-265, as amended through October 11, 1996. Available as NOAA Technical Memorandum NMFS-F/SPO-23, 1996.

Maximum Fishing Mortality Threshold (MFMT, $F_{THRESHOLD}$). One of the Status Determination Criteria (SDC) for determining if overfishing is occurring. It will usually be equivalent to the F corresponding to the MSY Control Rule. If current fishing mortality rates are above $F_{THRESHOLD,}$ overfishing is occurring.

Minimum Stock Size Threshold (MSST, $B_{THRESHOLD}$). Another of the Status Determination Criteria. The greater of (a) $½B_{MSY}$, or (b) the minimum stock size at which rebuilding to B_{MSY} will occur within 10 years of fishing at the MFMT. MSST should be measured in terms of spawning biomass or other appropriate measures of productive capacity. If current stock size is below $B_{THRESHOLD}$, the stock is overfished.

Maximum Spawning Potential (MSP). This type of reference point is used in some fishery management plans to define overfishing. The MSP is the spawning stock biomass per recruit (SSB/ R) when fishing mortality is zero. The degree to which fishing reduces the SSB/R is expressed as a

percentage of the MSP (i.e., %MSP). A stock is considered overfished when the fishery reduces the %MSP below the level specified in the overfishing definition. The values of %MSP used to define overfishing can be derived from stock-recruitment data or chosen by analogy using available information on the level required to sustain the stock.

Maximum Sustainable Yield (MSY). The largest average catch that can be taken from a stock under existing environmental conditions.

Overfishing. According to the National Standard Guidelines, "overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis." Overfishing is occurring if the MFMT is exceeded for 1 year or more.

Optimum Yield (OY). The amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems. MSY constitutes a "ceiling" for OY. OY may be lower than MSY, depending on relevant economic, social, or ecological factors. In the case of an overfished fishery, OY should provide for rebuilding to B_{MSY}.

Partial Recruitment. Patterns of relative vulnerability of fish of different sizes or ages due to the combined effects of selectivity and availability.

Rebuilding Plan. A plan that must be designed to recover stocks to the B_{MSY} level within 10 years when they are overfished (i.e. when B < MSST). Normally, the 10 years would refer to an expected time to rebuilding in a probabilistic sense.

Recruitment. This is the number of young fish that survive (from birth) to a specific age or grow to a specific size. The specific age or size at which recruitment is measured may correspond to when the young fish become vulnerable to capture in a fishery or when the number of fish in a cohort can be reliably estimated by a stock assessment.

Recruitment overfishing. The situation existing when the fishing mortality rate is so high as to cause a reduction in spawning stock which causes recruitment to become impaired.

Recruitment per spawning stock biomass (R/SSB). The number of fishery recruits (usually age 1 or 2) produced from a given weight of spawners, usually expressed as numbers of recruits per kilogram of mature fish in the stock. This ratio can be computed for each year class and is often used as an index of pre-recruit survival, since a high R/SSB ratio in one year indicates above-average numbers resulting from a given spawning biomass for a particular year class, and vice versa.

Reference Points. Values of parameters (e.g. B_{MSY}, F_{MSY}, $F_{0.1}$) that are useful benchmarks for guiding management decisions. Biological reference points are typically limits that should not be exceeded with significant probability (e.g., MSST) or targets for management (e.g., OY).

Risk. The probability of an event times the cost associated with the event (loss function). Sometimes "risk" is simply used to denote the probability of an undesirable result (e.g. the risk of biomass falling below MSST).

Status Determination Criteria (SDC). Objective and measurable criteria used to determine if a stock is being overfished or is in an overfished state according to the National Standard Guidelines.

Selectivity. Measures the relative vulnerability of different age (size) classes to the fishing gears(s).

Spawning Stock Biomass (SSB). The total weight of all sexually mature fish in a stock.

Spawning stock biomass per recruit (SSB/R or SBR). The expected lifetime contribution to the spawning stock biomass for each recruit. SSB/R is calculated assuming that F is constant over the life span of a year class. The calculated value is also dependent on the exploitation pattern and rates of growth and natural mortality, all of which are also assumed to be constant.

Stock Synthesis (SS). This application provides a statistical framework for calibration of a population dynamics model using a diversity of fishery and survey data. SS is designed to accommodate both age and size structure and with multiple stock sub-areas. Selectivity can be cast as age specific only, size-specific in the observations only, or size-specific with the ability to capture the major effect of size-specific survivorship. The overall model contains subcomponents which simulate the population dynamics of the stock and fisheries, derive the expected values for the various observed data, and quantify the magnitude of difference between observed and expected data. Parameters are searched for which will maximize the goodness-of-fit. A management layer is also included in the model allowing uncertainty in estimated parameters to be propagated to the management quantities, thus facilitating a description of the risk of various possible management scenarios. The structure of SS allows for building of simple to complex models depending upon the data available.

Survival Ratios. Ratios of recruits to spawners (or spawning biomass) in a stock-recruitment analysis. The same as the recruitment per spawning stock biomass (R/SSB), see above.

TAC. Total allowable catch is the total regulated catch from a stock in a given time period, usually a year.

Target Reference Points. Benchmarks used to guide management objectives for achieving a desirable outcome (e.g., OY). Target reference points should not be exceeded on average.

Uncertainty. Uncertainty results from a lack of perfect knowledge of many factors that affect stock assessments, estimation of reference points, and management. Rosenberg and Restrepo (1994) identify 5 types: measurement error (in observed quantities), process error (or natural population variability), model error (mis-specification of assumed values or model structure), estimation error (in population parameters or reference points, due to any of the preceding types of errors), and implementation error (or the inability to achieve targets exactly for whatever reason)

Virtual population analysis (VPA) (or cohort analysis). A retrospective analysis of the catches from a given year class which provides estimates of fishing mortality and stock size at each age over its life in the fishery. This technique is used extensively in fishery assessments.

Year class (or cohort). Fish born in a given year. For example, the 1987 year class of cod includes all cod born in 1987. This year class would be age 1 in 1988, age 2 in 1989, and so on.

Yield per recruit (Y/R or YPR). The average expected yield in weight from a single recruit. Y/R is calculated assuming that F is constant over the life span of a year class. The calculated value is also dependent on the exploitation pattern, rate of growth, and natural mortality rate, all of which are assumed to be constant.

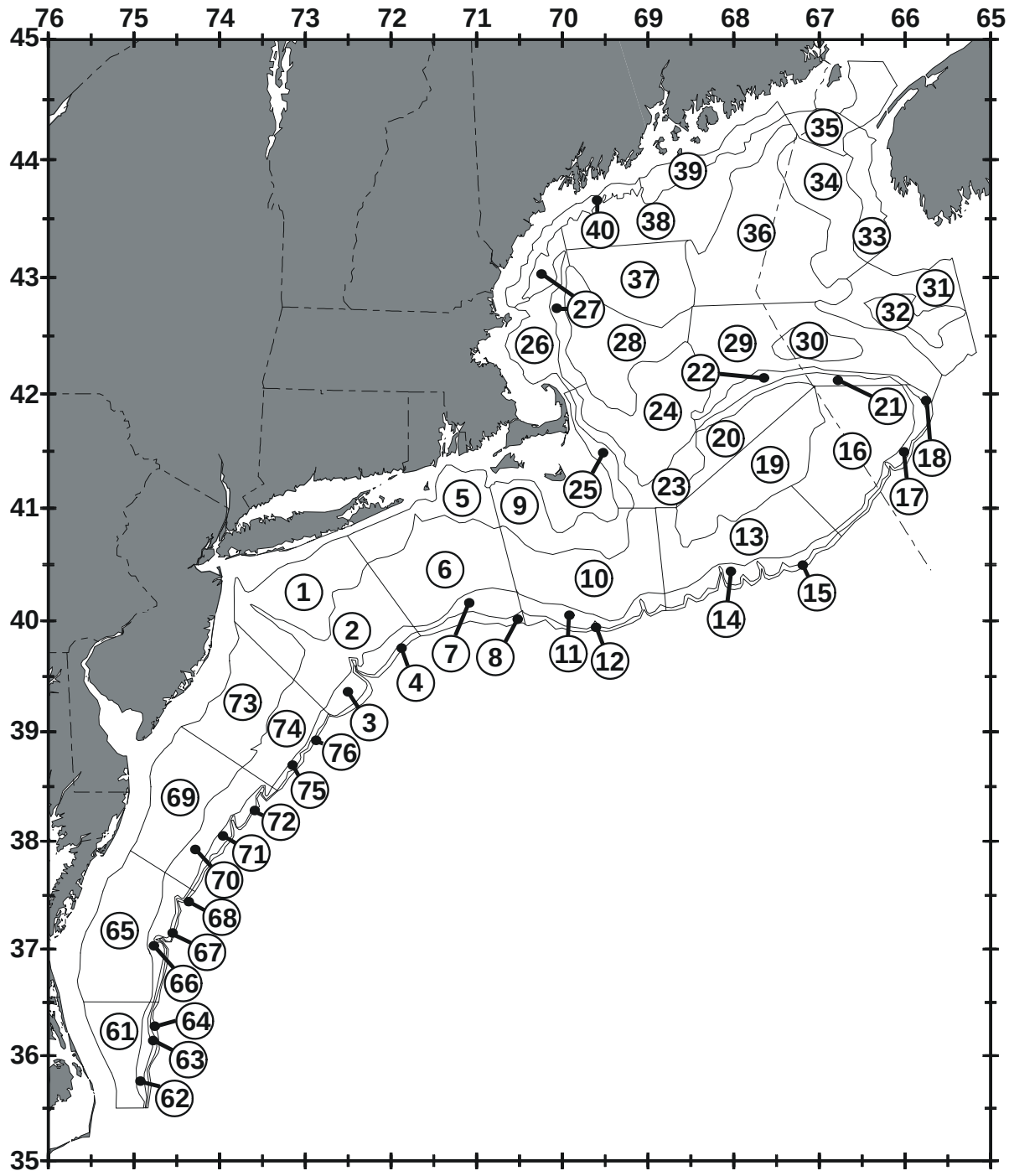

Figure 1. Offshore depth strata sampled during Northeast Fisheries Science Center bottom trawl research surveys. Some of these may not be sampled presently.

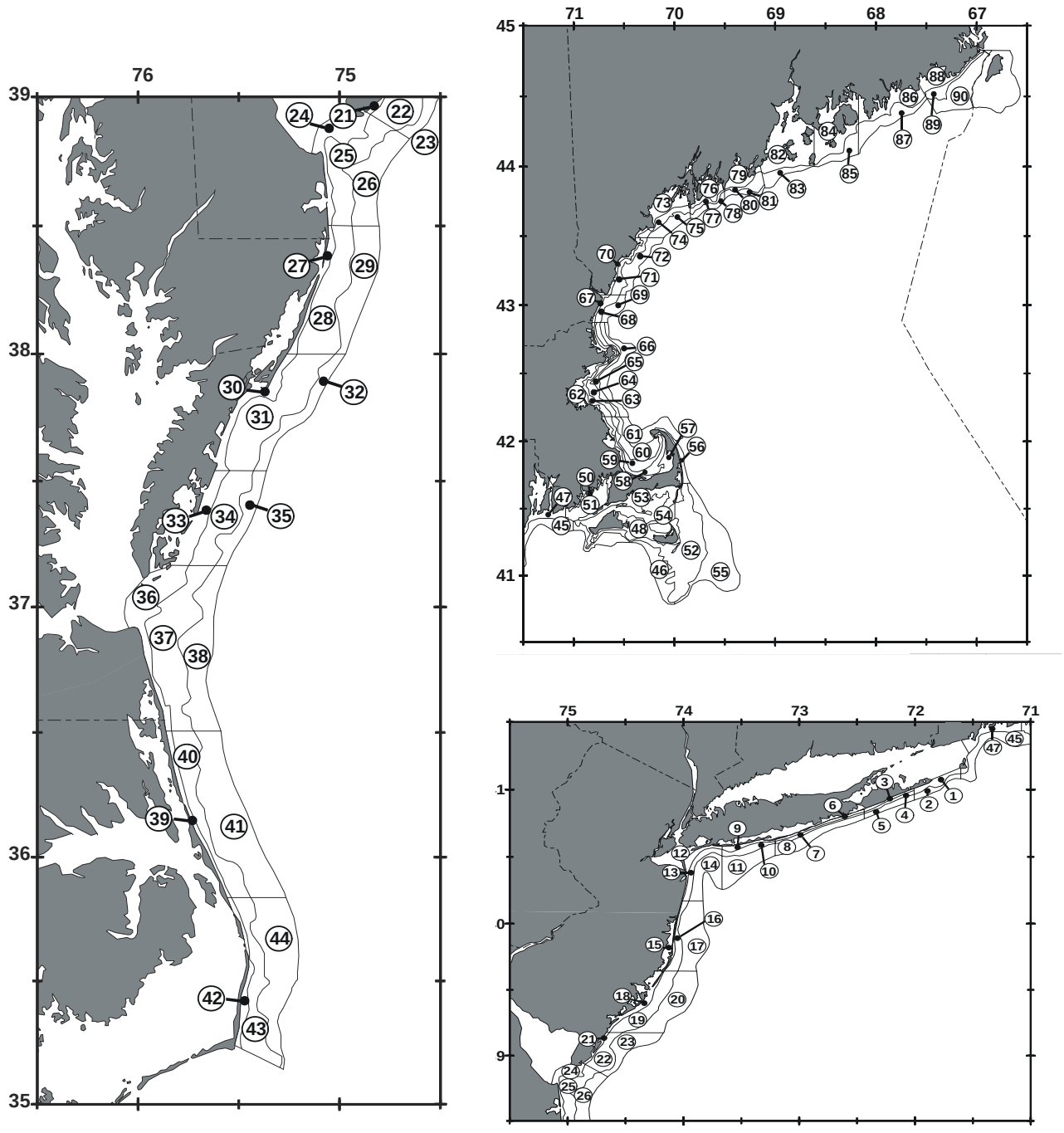

Figure 2. Inshore depth strata sampled during Northeast Fisheries Science Center bottom trawl research surveys. Some of these may not be sampled presently.

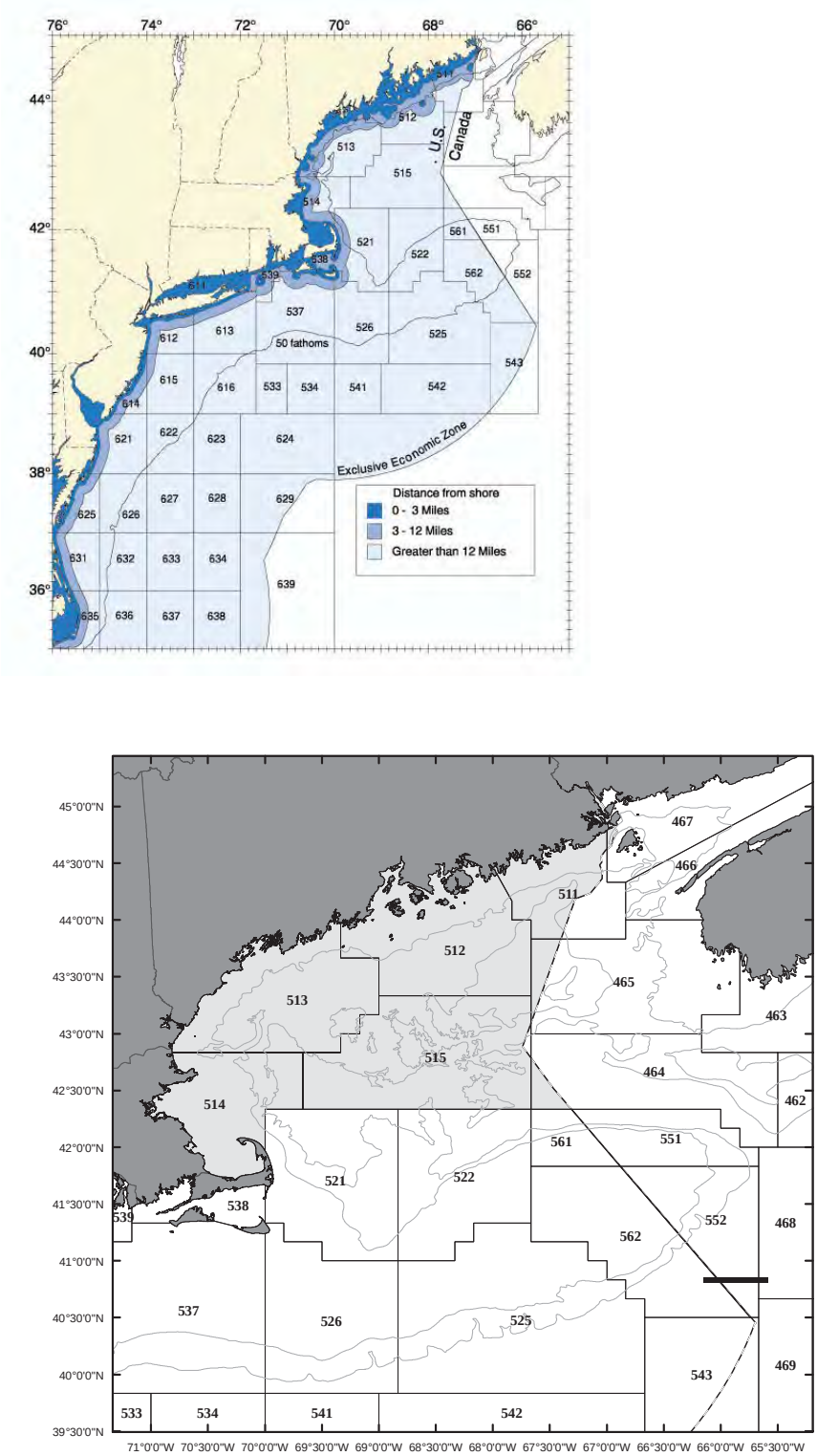

Figure 3. Statistical areas used for reporting commercial catches.

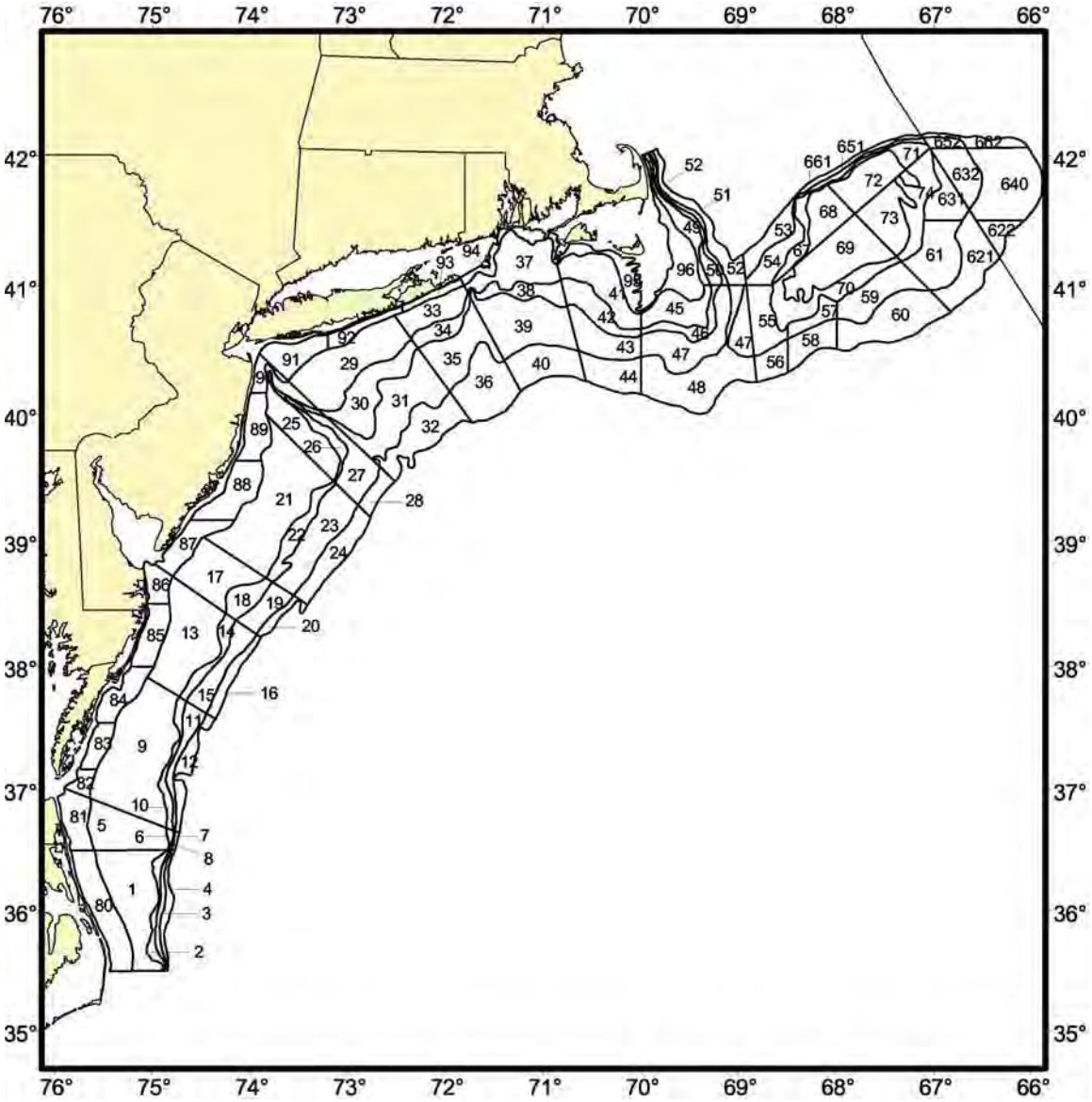

Figure 4. Northeast Fisheries Science Center clam resource survey strata, along the east coast of the US.

A. SUMMER FLOUNDER ASSESSMENT SUMMARY FOR 2013

State of Stock: The summer flounder stock was not overfished and overfishing was not occurring in 2012 relative to the new (updated) biological reference points from the 2013 SAW/SARC57 (Figure A1). Fishing mortality on the fully selected age 4 fish ranged between 0.790 and 1.745 during 1982-1996. The fishing mortality rate has decreased from 0.849 in 1997 to 0.285 in 2012, below the new reference point F_{MSY} proxy = $F_{35\%}$ = 0.309 (Figure A2). There is a 90% probability that the fishing mortality rate in 2012 was between 0.213 and 0.343. Spawning stock biomass (SSB) decreased from 24,300 mt in 1982 to 5,521 mt in 1989, and then increased to a peak of 53,156 mt by 2010. SSB was estimated to be 51,238 mt in 2012, about 82% of the new reference point SSB_{MSY} proxy = $SSB_{35\%}$ = 62,394 mt (Figure A3). There is a 90% chance that SSB in 2012 was between 45,781 and 61,297 mt. The average recruitment from 1982 to 2012 is 43 million fish at age 0. The 1982 and 1983 year classes are the largest in the assessment time series, at 62 and 76 million fish; the 1988 year class is the smallest at only 10 million fish. The 2012 year class is currently estimated to be about 37 million fish (Figure A4).

Projections: If the 2013 Annual Catch Limit (ACL) of 10,133 mt = 22.339 million lbs is taken, and the 2013 median (50% probability) projected dead discards are 1,735 mt = 3.825 million lbs, then the median landings are projected to be 8,398 mt = 18.514 million lbs. The median F in 2013 is projected to be 0.250, below the new fishing mortality threshold = F_{MSY} proxy = $F_{35\%}$ = 0.309. The median SSB on November 1, 2013 is projected to be 56,662 mt = 124.918 million lbs, below the new biomass target SSB_{MSY} proxy = $SSB_{35\%}$ = 62,394 mt = 137.555 million lbs.

If the stock is fished at the new fishing mortality threshold = F_{MSY} proxy = $F_{35\%}$ = 0.309 in 2014, the median landings are projected to be 9,961 mt = 21.960 million lbs, with median dead discards of 2,177 mt = 4.799 million lbs, and median total catch = 12,138 mt = 26.760 million lbs. This projected median total catch would be the Overfishing Limit (OFL) for 2014, and is less than the new MSY proxy = 12,945 mt (28.539 million lbs; 10,455 mt = 23.049 million lbs of median landings plus 2,490 mt = 5.490 million lbs of median dead discards). The median SSB on November 1, 2014 is projected to be 57,140 mt = 125.972 million lbs, 92% of the new biomass target of SSB_{MSY} proxy = $SSB_{35\%}$ = 62,394 mt = 137.555 million lbs. The projected catch estimates in the following table are medians of the catch distributions for fixed F in 2014-2016.

OFL Total Catch, Landings, Discards, Fishing Mortality (F)
and Spawning Stock Biomass (SSB) in 2014-2016
Catches and SSB in metric tons

Year	Total Catch	Landings	Discards	F	SSB
2014	12,138	9,961	2,177	0.309	57,140
2015	11,785	9,497	2,288	0.309	58,231
2016	11,914	9,527	2,387	0.309	59,268

If the MAFMC risk policy is applied by the SSC and this assessment is classified as "typical level 3", then given the size of SSB relative to SSB_{MSY} and assuming OFL CV = 100% and an annual OFL corresponding to F = 0.309, then results associated with Acceptable Biological Catch (ABC) follow:

ABC Total Catch, Landings, Discards, Fishing Mortality (F)
and Spawning Stock Biomass (SSB) in 2014-2016
Catches and SSB in metric tons

Year	Total Catch	Landings	Discards	F	SSB
2014	8,071	6,649	1,422	0.197	60,581
2015	9,992	8,117	1,875	0.237	63,969
2016	10,729	8,681	2,048	0.245	66,469

Catch: Total landings peaked in 1983 at 26,100 mt = 57.540 million lbs. During the late 1980s and into 1990, landings decreased, reaching 4,200 mt = 9.259 million lbs in the commercial fishery in 1990 and 1,400 mt = 3.086 million lbs in the recreational fishery in 1989. Total landings were only 6,500 mt = 14.330 million lbs in 1990. Reported 2012 landings in the commercial fishery were 6,047 mt = 13.331 million lbs, about 5% over the commercial quota. Estimated 2012 landings in the recreational fishery (as estimated by the MRIP) were 2,853 mt = 6.290 million lbs, about 26% under the recreational harvest limit. Total commercial and recreational landings in 2012 were 8,900 mt = 19.621 million lbs and total commercial and recreational dead discards were 1,533 mt = 3.380 million lbs, for a total catch in 2012 of 10,433 mt = 23.001 million lbs. Commercial landings have accounted for 54% of the total catch since 1982, with recreational landings accounting for 34%, commercial discards about 8%, and recreational discards about 5%. Commercial discard losses in the otter trawl and scallop dredge fisheries have accounted for about 14% of the total commercial catch, assuming a commercial discard mortality rate of 80%. Recreational discard losses have accounted for about 12% of the total recreational catch, assuming a recreational discard mortality rate of 10%.

Catch and Status Table: Summer flounder
(weights in 000s mt, recruitment in millions, arithmetic means)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Max[1]	Min[1]	Mean[1]
Commercial landings	6.5	8.2	7.8	6.3	4.5	4.1	4.8	5.9	7.5	6.0	17.1	4.0	7.7
Commercial discards[3]	1.1	1.6	1.5	1.5	2.1	1.2	1.4	1.5	1.1	0.7	2.2	0.2	1.2
Recreational landings	5.2	5.0	4.9	4.8	4.2	3.7	2.7	2.3	2.6	2.9	12.5	1.4	4.8
Recreational discards[3]	0.8	1.0	1.0	0.8	1.0	1.2	1.1	1.1	1.1	0.8	1.2	0.1	0.7
Total Catch	13.0	14.5	13.9	12.1	10.0	9.3	8.8	9.5	11.4	10.4	26.3	7.9	13.6
Commercial quota	6.3	7.7	8.2	6.4	4.7	4.3	5.0	6.0	8.0	5.8	8.1	8.2	7.1
Recreational harvest limit	4.2	5.1	5.5	4.3	3.1	2.9	3.3	4.0	5.3	3.9	5.5	2.9	4.7
Spawning Stock Biomass[2]	52.6	50.7	47.6	49.2	48.5	48.9	51.6	53.2	51.1	51.2	53.2	5.5	30.4
Recruitment (age 0)	37.8	53.5	32.3	39.0	40.0	48.7	54.9	34.6	19.6	37.2	75.8	9.8	43.0
F (age 4)	0.40	0.45	0.45	0.33	0.26	0.31	0.30	0.31	0.36	0.29	1.75	0.26	0.79

1: Over the period 1982-2012
2: On November 1 annually
3: Dead discards

Stock Distribution and Identification: The Mid-Atlantic Fishery Management Council (MAFMC) and Atlantic States Marine Fisheries Commission (ASMFC) Fishery Management Plan for summer flounder defines the management unit as all summer flounder from the southern border of North Carolina northeast to the US-Canada border. For assessment purposes, the definition of Wilk et al. (1980) of a unit stock extending from Cape Hatteras north to New England has been accepted in this and previous assessments. The current management unit is consistent with a summer flounder genetics study, which revealed no population subdivision at Cape Hatteras (Jones and Quattro 1999). A consideration of summer flounder stock structure incorporating tagging data supported the existence of stocks north and south of Cape Hatteras, with the stock north of Cape Hatteras possibly composed of two distinct spawning aggregations, off New Jersey and Virginia-North Carolina (Kraus and Musick, 2003). The assessment is consistent with the conclusions of this study.

Data and Assessment: The population model implemented for summer flounder is the forward projecting age-structured model ASAP (Legault 1998, NFT 2013a). The model assumes age-dependent values for instantaneous natural mortality (M) that result in a mean value of M = 0.25. The catch in the model includes both commercial and recreational fishery landings and discards at age. The fishery landings and discards are treated as two fleets in the model. Indices of stock abundance including age compositions from the NEFSC winter, spring, and fall, Massachusetts spring and fall, Rhode Island fall and monthly fixed, Connecticut spring and fall, Delaware, New York, New Jersey, VIMS ChesMMAP, and VIMS NEAMAP spring and fall trawl surveys were used in the ASAP model calibration. Aggregate indices of stock abundance from the URI GSO trawl survey and NEFSC MARMAP and ECOMON larval surveys, and recruitment indices (age

0; Young-Of-the-Year, YOY) from surveys conducted by the states of Massachusetts, Delaware, Maryland, and Virginia were also used in the model calibration.

Biological Reference Points (BRPs): The SAW/SARC57 biological reference points for summer flounder are based on stochastic yield and SSB per recruit and stochastic projection models in the NOAA NFT framework (NFT 2013b, c; Thompson and Bell 1934) using values from the 2013 assessment. The new fishing mortality reference point is $F_{35\%}$ = 0.309 (CV = 15%) as a proxy for F_{MSY}. The new biomass reference point proxy is estimated as the projection of Jan 1, 2013 stock sizes at $F_{35\%}$ = 0.309 and mean recruitment of 43 million fish per year (1982-2012). The new SSB_{MSY} proxy is estimated to be 62,394 mt (137.6 million lbs; CV = 13%), and the new biomass threshold of one-half SSB_{MSY} is estimated to be 31,197 mt (68.8 million lbs; CV = 13%). The new MSY proxy is estimated to be 12,945 mt (28.539 million lbs; CV = 13%; 10,455 mt = 23.049 million lbs of landings plus 2,490 mt = 5.490 million lbs of discards).

The biological reference points estimated in the 2008 SAW47 assessment were MSY proxy = $F_{35\%}$ = 0.310, SSB_{MSY} proxy = $SSB_{35\%}$ = 60,074 mt, and MSY proxy = $MSY_{35\%}$ = 13,122 mt (NEFSC 2008). NMFS determined the summer flounder stock to be rebuilt in 2010, based on the 2011 assessment update (Terceiro 2011). The summer flounder stock is not overfished and overfishing is not occurring in 2012 relative to the SAW47 biological reference points.

Fishing Mortality: Fishing mortality calculated at the currently fully recruited (peak) age 4 ranged between 0.790 and 1.745 during 1982-1996. The fishing mortality rate has decreased from 0.849 in 1997 to 0.285 in 2012. There is a 90% probability that the fishing mortality rate in 2012 was between 0.213 and 0.343.

Spawning Stock Biomass: SSB decreased from 24,300 mt in 1982 to 5,521 mt in 1989, and then increased to a peak of 53,156 mt by 2010. SSB was estimated to be 51,238 mt in 2012, about 82% of the reference point SSB_{MSY} = $SSB_{35\%}$ = 62,394 mt. There is a 90% probability that SSB in 2012 was between 45,781 and 61,297 mt.

Recruitment: The average recruitment from 1982 to 2012 is 43 million fish at age 0. The 1982 and 1983 year classes are the largest in the assessment time series, at 62 and 76 million fish; the 1988 year class is the smallest at only 10 million fish. The 2012 year class is currently estimated to be about 37 million fish.

Special Comments: The benchmark 2008 SAW 47 assessment (NEFSC 2008) was updated annually through 2012 (Terceiro 2012). The summer flounder stock assessment has historically exhibited a consistent retrospective pattern of underestimation of F and overestimation of SSB; the causes of this previous pattern have not been determined. In the current assessment model, however, no persistent retrospective patterns are evident. Over the last 7 years, the annual retrospective change in fishing mortality has ranged from +22% in 2006 to -5% in 2009, the annual retrospective change in SSB has ranged from -2% in 2011 to -21% 2006, and the annual retrospective change in recruitment has ranged from -45 in 2005 to +33% in 2009. The historical retrospective indicates that general trends of fishing mortality, stock biomass, and recruitment have been consistent since the 1990s assessments (Figure A5).

The SAW/SARC57 assessment includes several new research survey time series. The URI GSO trawl, NY trawl, VIMS ChesMMAP trawl, VIMS NEAMAP spring and fall trawl, and the NEFSC MARMAP and ECOMON larval surveys are now tabulated in the assessment and used in the population model calibration.

The NEFSC research surveys and Partnership for Mid-Atlantic Fisheries Science (PMAFS) fishery sampling confirm sexually dimorphic, temporal, and spatial differences in growth of summer flounder. The SAW57 working group investigated these differences in sex and how it might affect the assessment, but it was not possible to develop a full sex-disaggregated analysis. Sex-specific differences in life history parameters and in the spatial distribution of summer flounder by size may have an effect on the assessment model results and the biological reference point calculations. The assessment model presented to the SARC was deemed to provide an acceptable evaluation of stock status. Among potential approaches, simulation studies could be used to identify the critical data and model components and indicate directions for future work.

The northward shift in the center of biomass for summer flounder may be due in part to the expansion in population age structure and increases in abundance. Environmental or other factors that may have influence on this shift have not been fully quantified.

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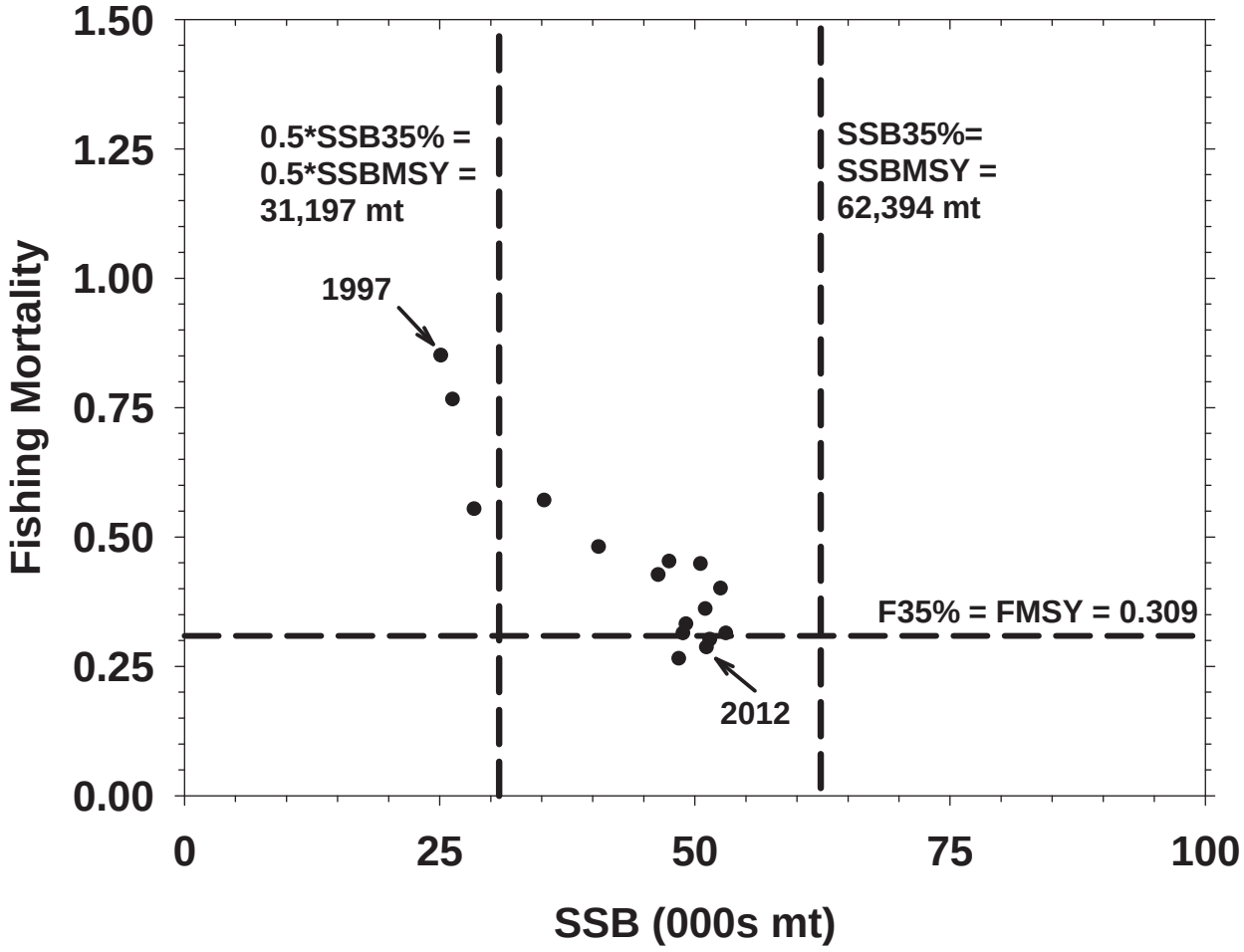

Figure A1. Estimates of summer flounder spawning stock biomass (SSB) and fully-recruited fishing mortality (F, peak at age 4) relative to the 2013 SAW/SARC57 biological reference points.

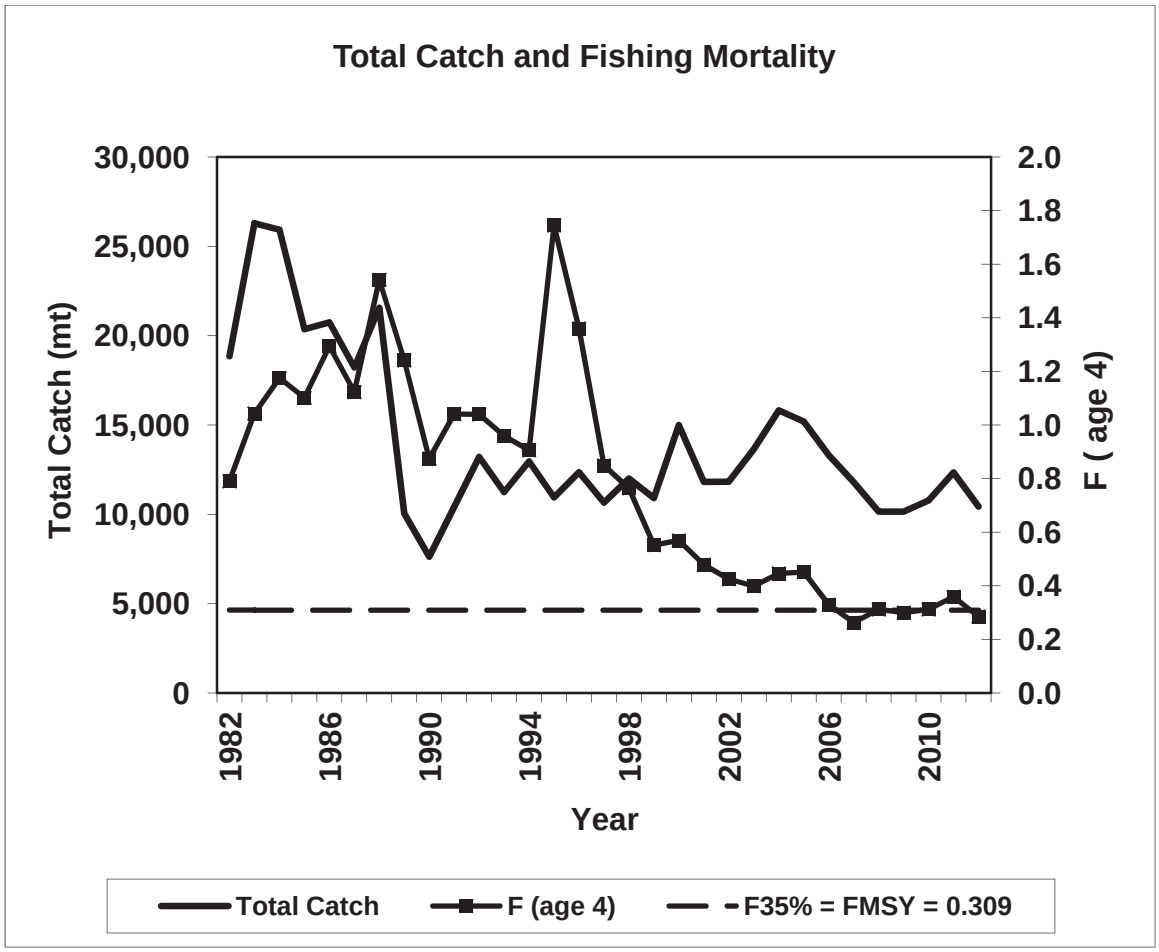

Figure A2. Total fishery catch and fully-recruited fishing mortality (F, peak at age 4) of summer flounder. The horizontal dashed line is the 2013 SAW/SARC57 fishing mortality reference point proxy.

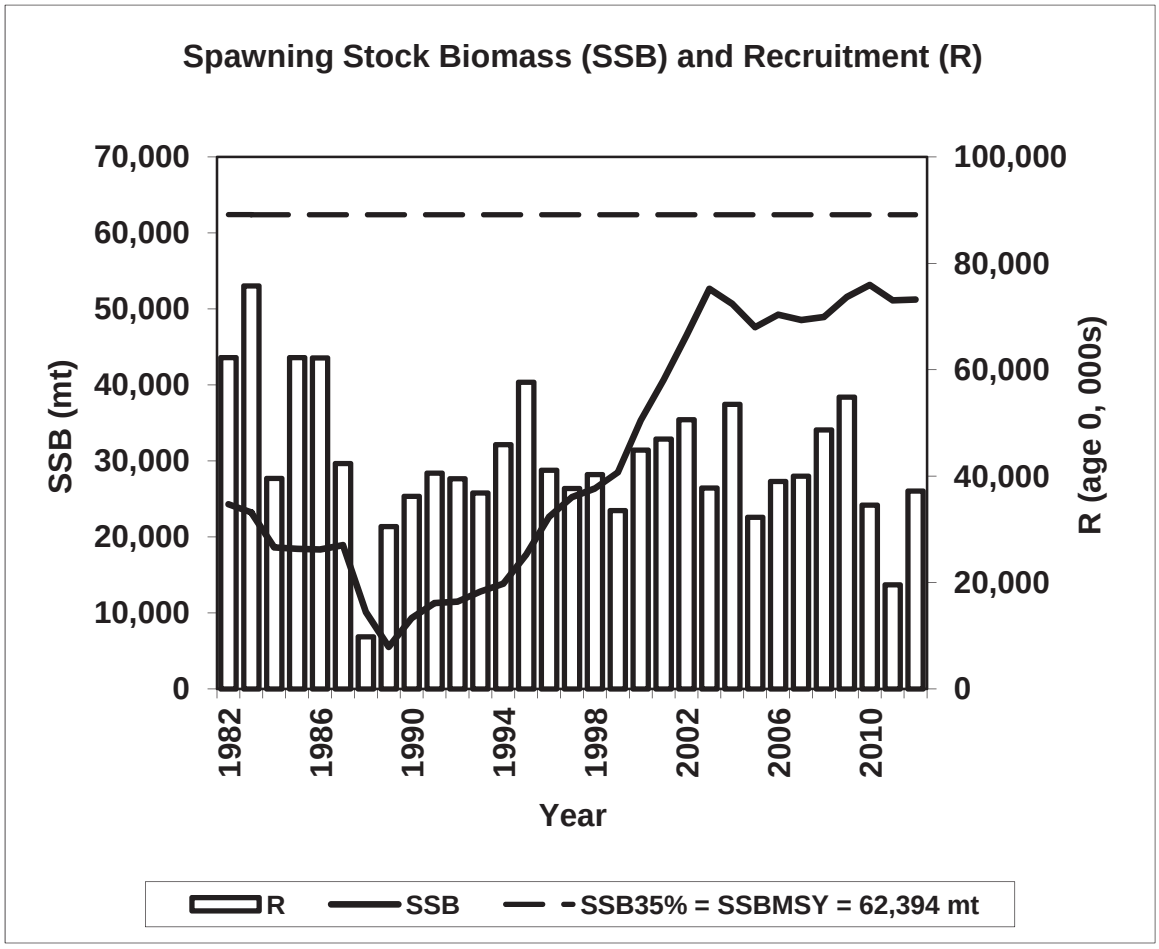

Figure A3. Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) by calendar year. The horizontal dashed line is the 2013 SAW/SARC57 biomass reference point proxy.

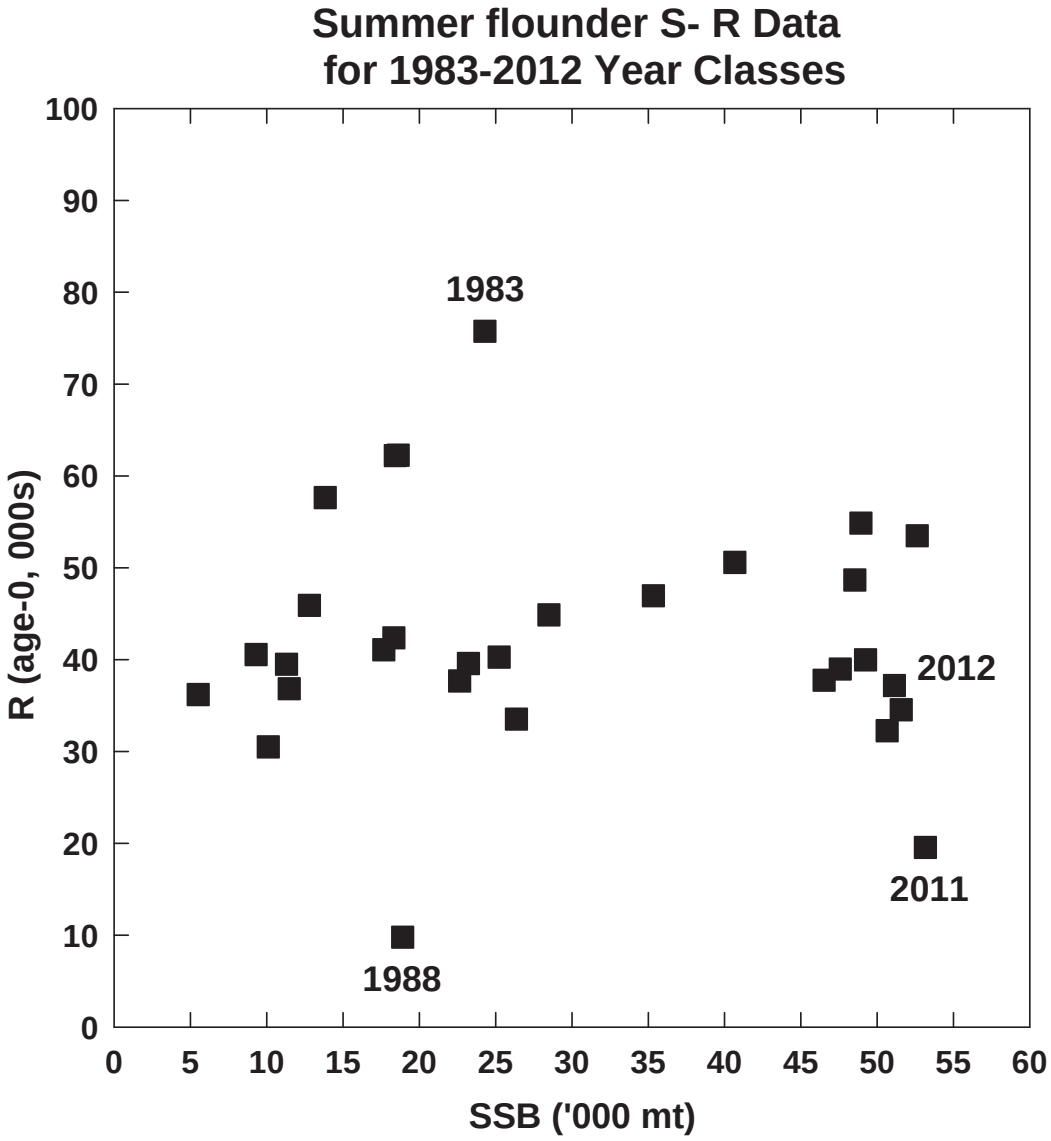

Figure A4. Stock-recruitment scatter plot for the summer flounder 1983-2012 year classes. Highest recruitment point is the 1983 year class (R = 75.5 million, SSB = 24,300 mt); highest SSB point is for the 2011 year class (R = 19.6 million, SSB = 53,156 mt). The 2012 year class is at R = 37.2 million, SSB = 51,100 mt.

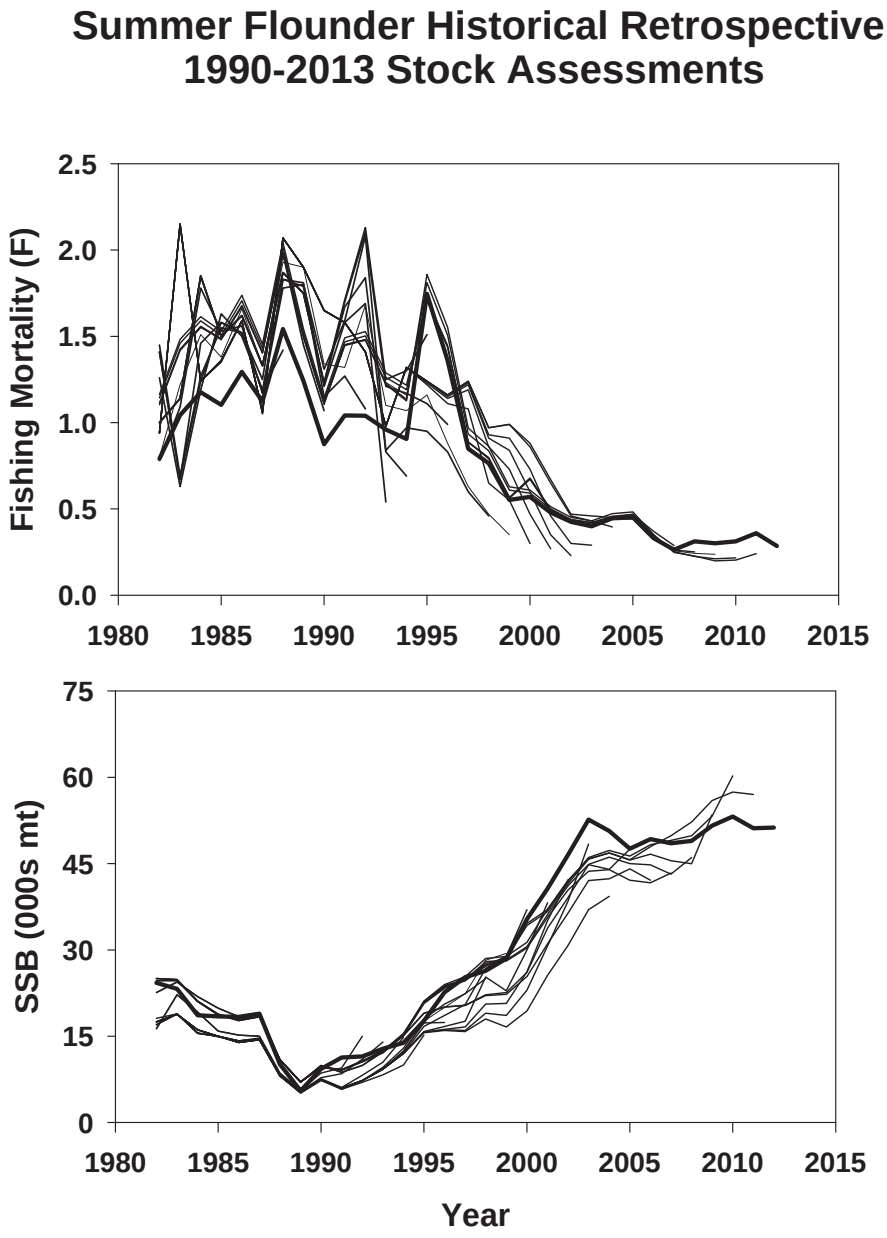

Figure A5. Historical retrospective of the 1990-2013 stock assessments of summer flounder.

B. ATLANTIC STRIPED BASS ASSESSMENT SUMMARY FOR 2013

State of the Stock:

In 2012, the Atlantic striped bass stock was not overfished or experiencing overfishing relative to the new reference points from the 2013 SAW/SARC57 (Figure B1-B3). Female spawning stock biomass (SSB) was estimated at 61.5 thousand mt (136 million lbs), above the SSB threshold of 57,904 mt, but below the SSB target of 72,380 mt. Total fishing mortality was estimated at 0.188, below the F threshold of 0.213 but above the F target of 0.175.

When compared to the biological reference points currently used in management (ASMFC 2008), the stock is neither overfished nor experiencing overfishing. Female SSB in 2012 is above both the target (46,101 mt) and the threshold (36,000 mt), and F_{2012} is below both the target (0.30) and the threshold (0.34).

Projections:

Five-year projections of female spawning SSB and fishing mortality (Figure B4) were made by using a standard forward projection methodology. If the current fully-recruited F (0.188) is maintained during 2013-2017, or if it increases to the threshold or decreases to the target, the probability of being below the SSB threshold increases until 2015-2016, but declines thereafter. If action to reduce F is delayed until 2014 or 2015, the probability of being below the SSB threshold increases (Figure B5).

If the current removals, meaning landings and dead discards of 3.59 million fish, are maintained during 2013-2017, the probability of the fully-recruited F being above the F threshold increases rapidly starting in 2013 and reaches near 1 by 2014 (Figure B6). If constant removals equal to 50% of the 2012 removals are taken during 2013-2017, the probability of fully-recruited F being above the F threshold is near zero.

Removals:

Commercial landings in the Atlantic striped bass fishery increased from roughly 115,000 fish (313 mt, 800,000 lbs) in 1990 to 913,160 fish (3,332 mt, 7.3 million lbs) in 2004. Since 2005, landings have fluctuated about an average of 988,410 fish (3,162 mt, 6.97 million lbs); however, landings have declined slightly in recent years to about 839,000 fish (2,952 mt, 6.5 million lbs) in 2012. In 2011 and 2012, the commercial coast-wide harvest was comprised primarily of ages 4-10 striped bass, while harvest in Chesapeake Bay fisheries (Maryland, Virginia, and the PRFC) was comprised mostly of ages 3-6. The estimates of dead commercial discards were 625,631 and 795,675 fish for 2011 and 2012. The highest discard losses occurred in anchor gill net, pounds net, and hook-and-line fisheries. Commercial harvest has generally exceeded dead discards since the mid 1990s.

Recreational harvest increased from 163,242 fish (1,010 mt, 2.2 million pounds) in 1990 to 2.78 million fish (14,082 mt, 31 million pounds) in 2006. Since 2006, harvest declined through 2012 to 1.5 million fish (8,740 mt, 19 million pounds). The number of striped bass that die due to discarding increased from 132 thousand fish in 1990 to 1.2 million fish in 1997. Dead discards

have remained around 1.2 million fish through 2003, but increased to the series maximum of 2.1 million fish in 2006. Since 2006, dead discards have declined substantially to 459,954 fish. Total recreational striped bass removals (harvest and dead discards) in 2011 and 2012 were 2.76 million fish and 1.96 million fish, respectively (Figure B7).

Stock Distribution and Identification:

Atlantic coast migratory striped bass live along the eastern coast of North America from the St. Lawrence River in Canada to the Roanoke River and other tributaries of Albemarle Sound in North Carolina (ASMFC 1990). Stocks which occupy coastal rivers from the Tar-Pamlico River in North Carolina south to the St. Johns River in Florida are believed primarily non-migratory and riverine. Historical tagging data suggest they do not presently undertake extensive Atlantic Ocean migrations as do stocks from the Roanoke River north (ASMFC 1990).

The coastal striped bass management unit includes the coastal and estuarine areas of all states and jurisdictions from Maine through North Carolina. The stock assessment includes data from both state and federal waters. Striped bass is currently managed by the Atlantic States Marine Fisheries Commission through Amendment 6 to the Fishery Management Plan. Amendment 6 implements a separate management program for the Chesapeake Bay due to the size availability of striped bass in this area (ASMFC 2003).

The Albemarle-Roanoke stock is currently managed as a non-coastal migratory stock by the state of North Carolina under the auspices of ASFMC. The Albemarle-Roanoke management unit is defined as the striped bass inhabiting the Albemarle, Currituck, Croatan, and Roanoke Sounds and their tributaries, including the Roanoke River.

Data and Assessment:

The striped bass assessment used total catch (harvest, commercial discards, and dead recreational discards) and catch-at-age split into three “fleets”: a Chesapeake Bay fleet, a coastal harvest fleet, and a commercial discard fleet. The assessment also used several fishery-independent indices of abundance for adults (the CT trawl survey, the NEFSC bottom trawl, the NJ bottom trawl survey, the NY ocean haul seine survey, the MD spawning stock survey, and the DE spawning stock electrofishing survey), and for young-of-year and age-1 fish (NY YOY and yearling survey, NJ YOY survey, VA YOY survey, and MD YOY and yearling surveys). Two fishery-dependent indices were used: the MRFSS/MRIP CPUE and the VA poundnet index.

The accepted model for striped bass is a forward projecting statistical catch-at-age model (SCA). The 2013 SCA model is used to estimate fishing mortality, abundance, and spawning stock biomass of striped bass during 1982-2012 from total removals-at-age and fisheries-dependent and fisheries-independent survey indices.

As a complement to the SCA, Jiang *et al.*’s (2007) instantaneous rates tagging model (IRCR) was run on data from the USFWS coast-wide striped bass tagging program through the 2011 tagging year to estimate survival, fishing mortality, and natural mortality.

Biological Reference Points:

Biological reference points for striped bass based on the previous assessment and ASMFC (2008), and currently used as thresholds in management are F_{MSY} (0.34) and an SSB proxy which is equivalent to the 1995 spawning stock biomass. The SSB target was calculated as 125% of the 1995 SSB, and the F target was defined as an exploitation rate of 24% or F=0.3. The estimate for F_{MSY} was derived using the results of the 2008 SCA assessment in which four stock-recruitment models were considered; a Ricker, a log-normal Ricker model, a Shepherd and a log-normal Shepherd model. The TC used a model averaging approach among the four results, producing an estimate of F_{MSY} = 0.34 (range of 0.28-0.40).

For this 2013 SAW/SARC57 assessment, the basis of SSB_{Target} and $SSB_{Threshold}$ remain the same, but the values have been updated. The procedure for estimating fishing mortality reference points used a stochastic projection drawing recruitment from empirical estimates of age-1 abundance from 1990 onwards (Figure B8) and a distribution of starting population abundance at age. The F threshold is the fishing mortality that will produce the $SSB_{Threshold}$ (=SSB_{1995}) as a long term average. The F target is the fishing mortality that will produce SSB_{Target} (=125%SSB_{1995}) as a long term average. This resulted in an F_{Target} = 0.175 corresponding to the SSB_{Target} of 72,380 mt (160 million lbs), and an $F_{Threshold}$ = 0.213 corresponding to the $SSB_{Threshold}$ of 57,904 mt (128 million lbs) (Figure B3). This procedure provides internally consistent SSB and F reference points. Values of MSY were explored using parametric stock-recruit relationships, but these were not regarded as reliable.

Fishing Mortality:

Fully-recruited F in 2012 is 0.188 (Figure B2). Total fishing mortality has been declining since a peak in 2006. The tag-based model gave similar results in terms of total mortality. The retrospective analysis indicated that terminal year fishing mortality was slightly overestimated in previous years (Figure B10).

Recruitment:

Striped bass experienced a period of strong recruitment from 1993-2003, followed by a period of lower recruitment from 2004-2009 (although not as low as the early 1980s, when the stock was overfished) (Figure B9). The 2011 year-class was strong, but early observations from Maryland's juvenile index indicate the 2012 year class was very weak. Retrospective analysis of recruitment revealed no consistent pattern of over- or underestimation (Figure B10).

Stock Biomass:

Female SSB grew steadily from 1982 through 2003 when it peaked at about 81 thousand mt (178 million lbs). Female SSB has declined since then and was estimated at 61.5 thousand metric tons (135 million lbs) in 2012 (Figure B1). Total biomass increased from 18,609 mt (41 million lbs) in 1982 to its peak at 221,774 mt (489 million lbs) in 1999. Total biomass declined through 2011, but increased in 2012 due to the strong 2011 year-class. The retrospective analysis indicated that terminal year SSB was slightly underestimated in previous years (Figure B10).

Special Comments:

Estimates of total biomass over the entire time period in this assessment are larger than estimates from the previous assessment because of the higher estimates of natural mortality on younger age classes derived from tag-based models. As a result the SSB reference point estimates are higher, although the basis is the same.

F reference points have been calculated to be consistent with the SSB reference points. Previously F reference points were calculated independently of SSB reference points and led to inconsistencies.

The estimate of recreational dead discards is sensitive to the assumed value of post-release mortality and this may result in a high error on these estimates.

References:

ASMFC. 1990. Source document for the supplement to the Striped Bass FMP - Amendment #4. Washington (DC): ASMFC. Fisheries Management Report No. 16. 244 p.

ASMFC. 2003. Amendment #6 to the Interstate Fishery Management Plan for Atlantic Striped Bass. Washington (DC): ASMFC. Fisheries Management Report No. 41. 63 p.

ASMFC. 2008. 2008 Review of the Atlantic States Marine Fisheries Commission Fishery Management Plan for Atlantic Striped Bass (*Morone saxatilis*). Washington, DC. 25 p.

Jiang H, Pollock KH, Brownie C, Hoenig JM, Latour RJ, Wells BK, Hightower JE. 2007. Tag return models allowing for harvest and catch and release: evidence of environmental and management impacts on striped bass fishing and natural mortality rates. North American Journal of Fisheries Management 27:387-396.

Total Catch of Atlantic Striped Bass (millions of fish) by Fishery

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Max[1]	Min[1]	Mean[1]
Commercial Harvest	0.87	0.91	0.97	1.05	1.02	1.01	1.04	1.03	0.93	0.84	1.23	0.01	0.65
Commercial Discards	0.26	0.46	0.79	0.19	0.60	0.30	0.61	0.25	0.63	0.80	0.80	0.04	0.34
Recreational Harvest	2.55	2.55	2.44	2.79	2.52	2.47	2.04	1.99	2.23	1.50	2.79	0.04	1.25
Recreational Dead Releases[2]	1.32	1.53	1.63	2.10	1.45	1.13	0.72	0.56	0.53	0.46	2.10	0.03	0.76

[1]: Minimum, maximum, and mean catch based on 1982-2012 data.
[2]: Assuming a 9% mortality rate on fish released alive.

Current Status of Atlantic Striped Bass

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Min[3]	Max[3]	Mean[3]
Female SSB (thousands of mt)	81.43	79.32	79.66	74.24	71.91	69.90	67.91	65.88	65.59	61.51	4.1	81.4	47.7
Total Abundance (millions of fish)	174.77	243.49	190.20	170.67	138.30	147.30	123.21	135.44	169.87	215.21	32.1	251.1	151.5
Age-1 Abundance (millions of fish)	76.71	160.13	87.40	82.80	59.05	80.41	55.94	76.56	108.57	143.55	18.3	183.4	87.1
Maximum F-at-Age	0.185	0.218	0.229	0.263	0.231	0.236	0.195	0.190	0.228	0.188	0.033	0.947	0.173

[3]: Minimum, maximum, and mean based on 1982-2012 model estimates.

	SARC46 and ASMFC 2008		Updated (SARC57, 2013)	
Reference Point	Definition	Value	Definition	Value
$\mathbf{F_{Threshold}}$	F_{MSY}	0.34	F projected to obtain $SSB_{Threshold}$	0.213
$\mathbf{F_{Target}}$	24% Exploitation rate	0.30	F projected to obtain SSB_{Target}	0.175
$\mathbf{SSB_{Threshold}}$	Estimate of 1995 SSB	36,000 mt	Estimate of 1995 SSB	57,904 mt
$\mathbf{SSB_{Target}}$	125% of $SSB_{Threshold}$	46,101 mt	125% of $SSB_{Threshold}$	72,380 mt

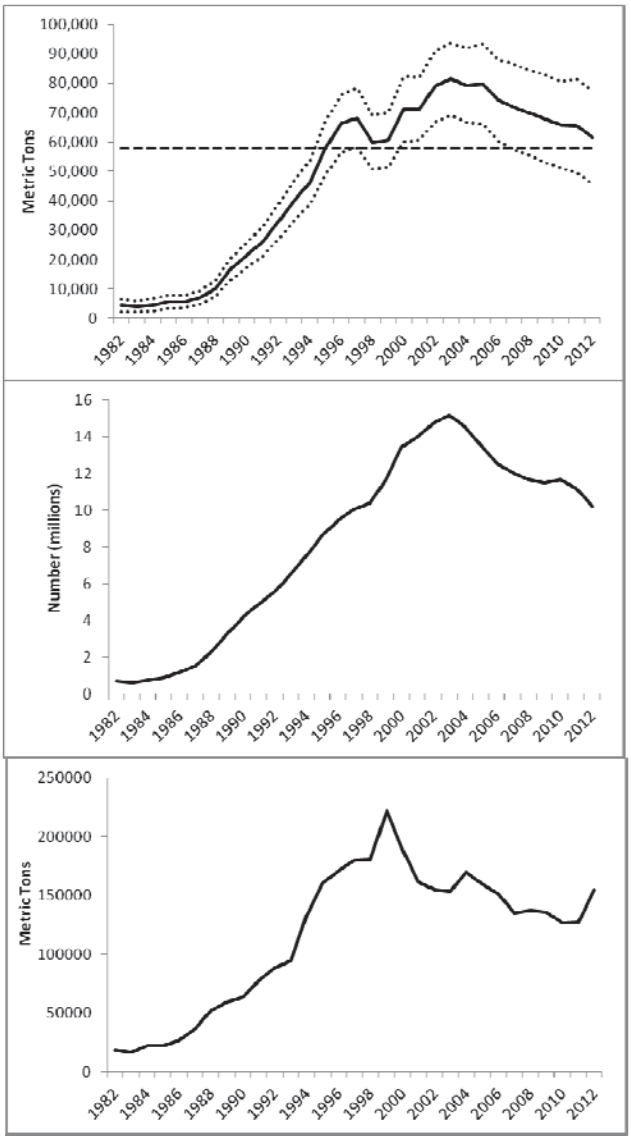

Figure B1. Striped bass. Estimates of A) female spawning stock biomass by year (solid line), B) female spawning stock numbers, and C) total January-1 biomass . Dotted lines equal 95% confidence intervals. Dashed line is the female spawning stock biomass threshold (1995 value).

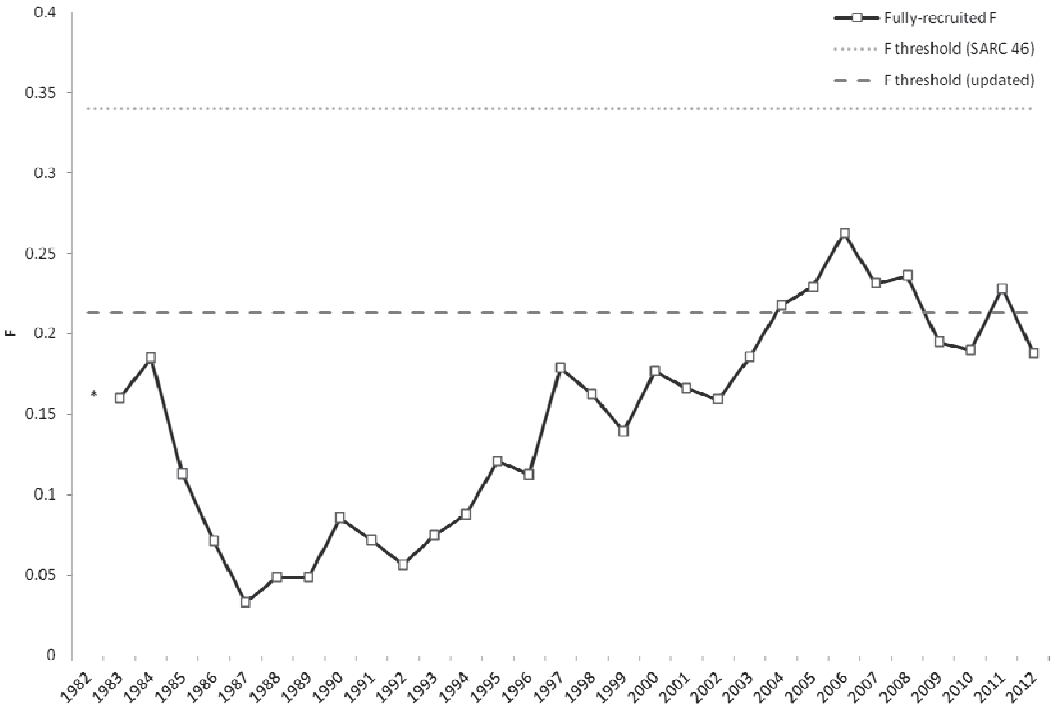

Figure B2. Striped bass. Fully recruited F relative to current (SARC 46) and updated (this SAW/SARC57 assessment) F threshold values. * indicates that the F for 1982 is not included on this graph as the model estimate was considered unrealistically high and unreliable.

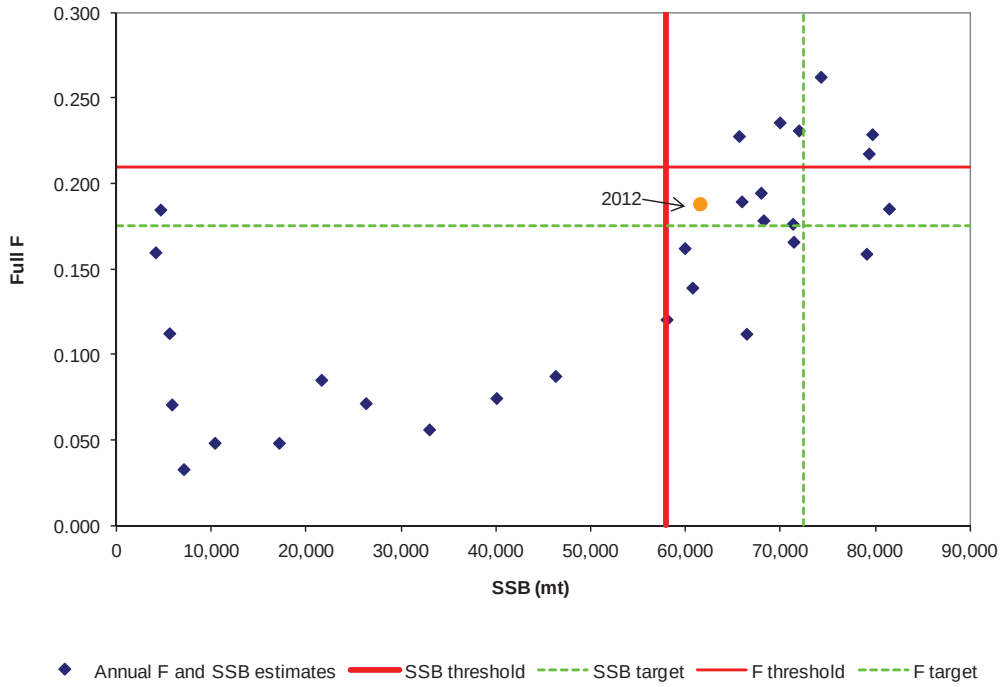

Figure B3. Striped bass. Annual estimates of F vs. SSB. Solid vertical and horizontal lines represent the SSB and F threshold reference points from SAW/SARC57, respectively, and dashed lines represent the target values. The orange circle represents the 2012 values for F and SSB.

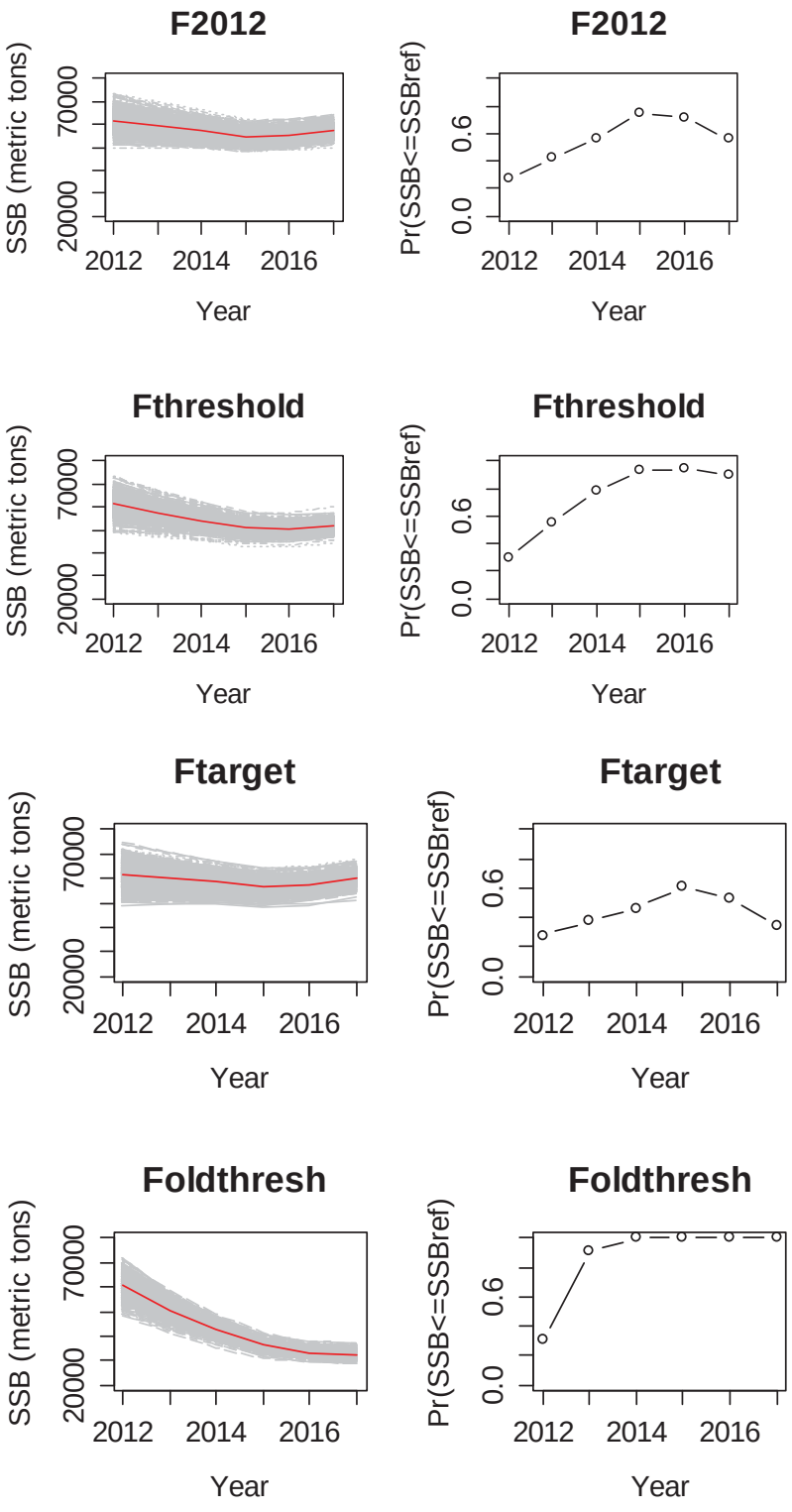

Figure B4. Striped bass. SSB trajectories and probability of being overfished under constant F scenarios.

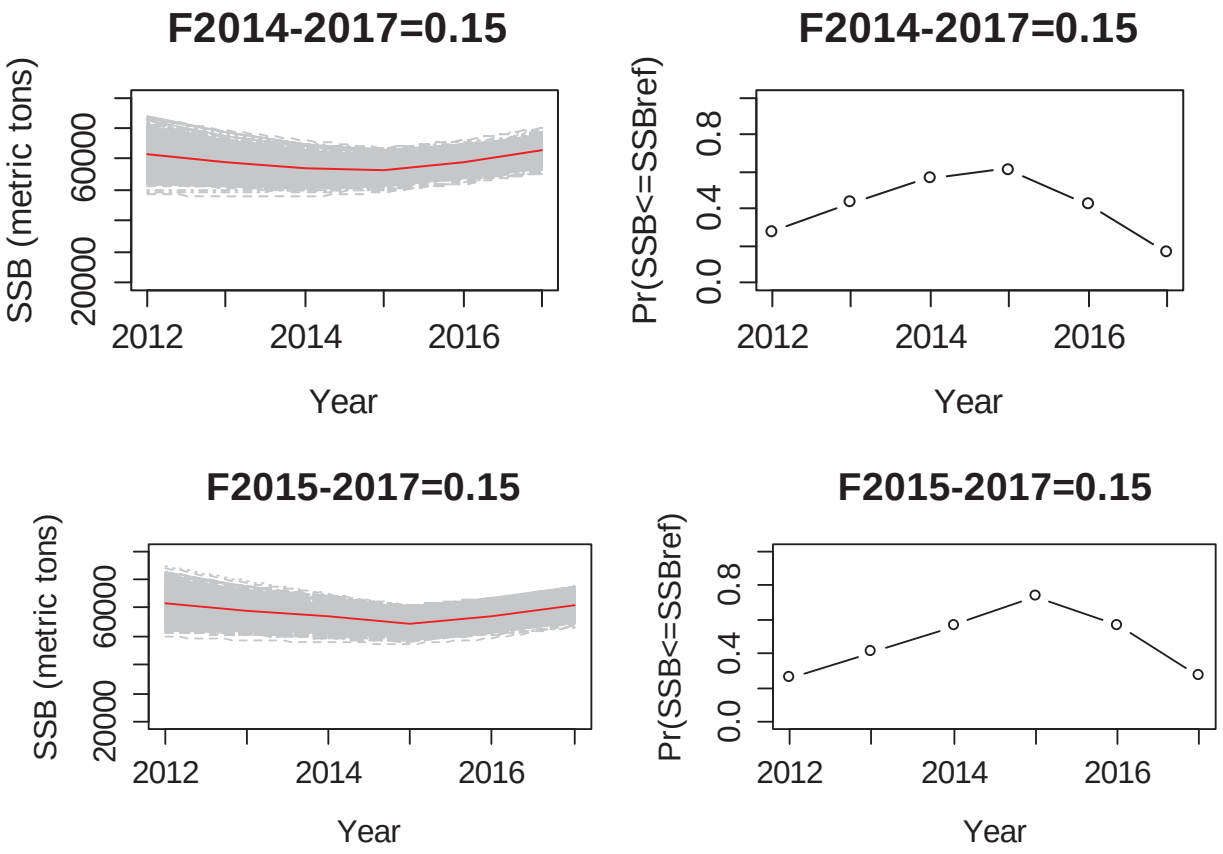

Figure B5. Striped bass. Effects of delaying reduction in F until 2014 (top) or 2015 (bottom) on SSB trajectories and probability of being below the SSB threshold.

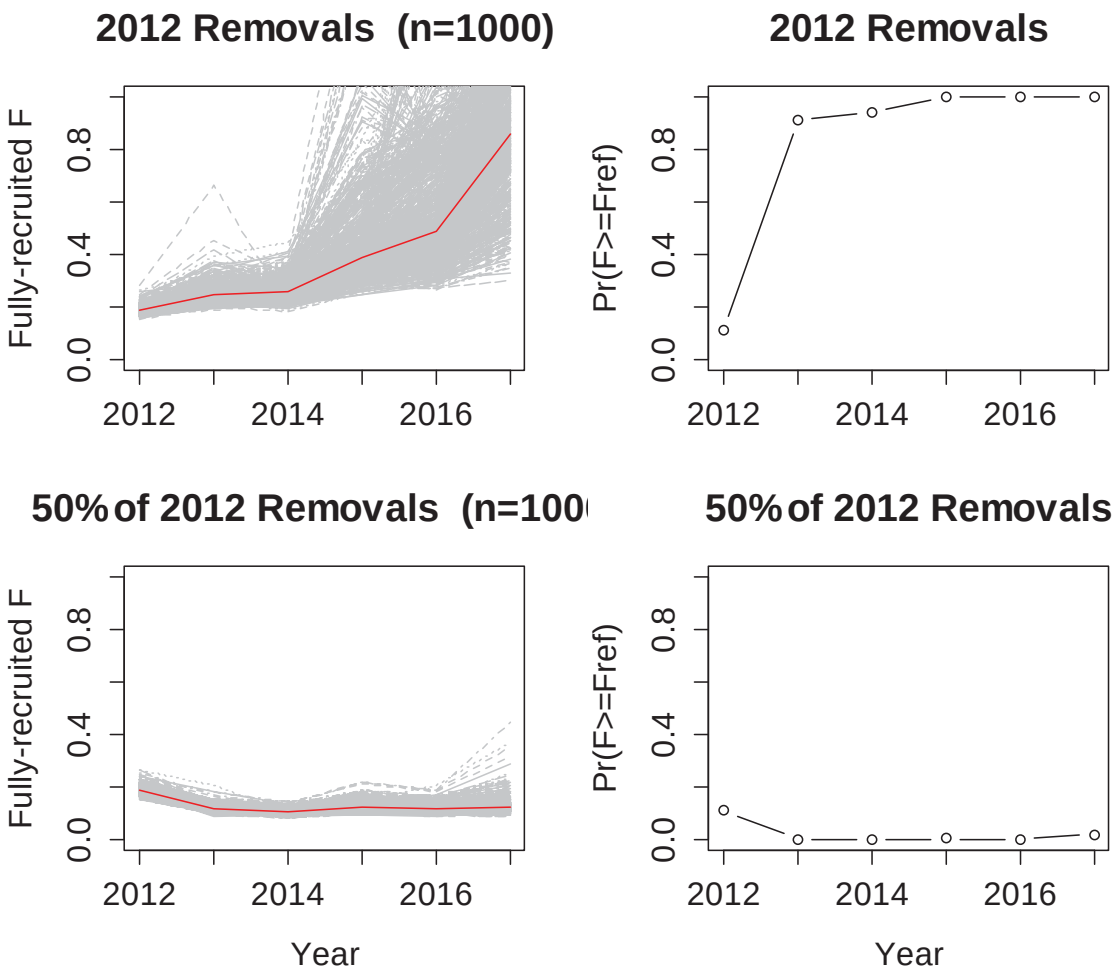

Figure B6. Striped bass. SSB trajectories and probability of overfishing under constant catch scenarios.

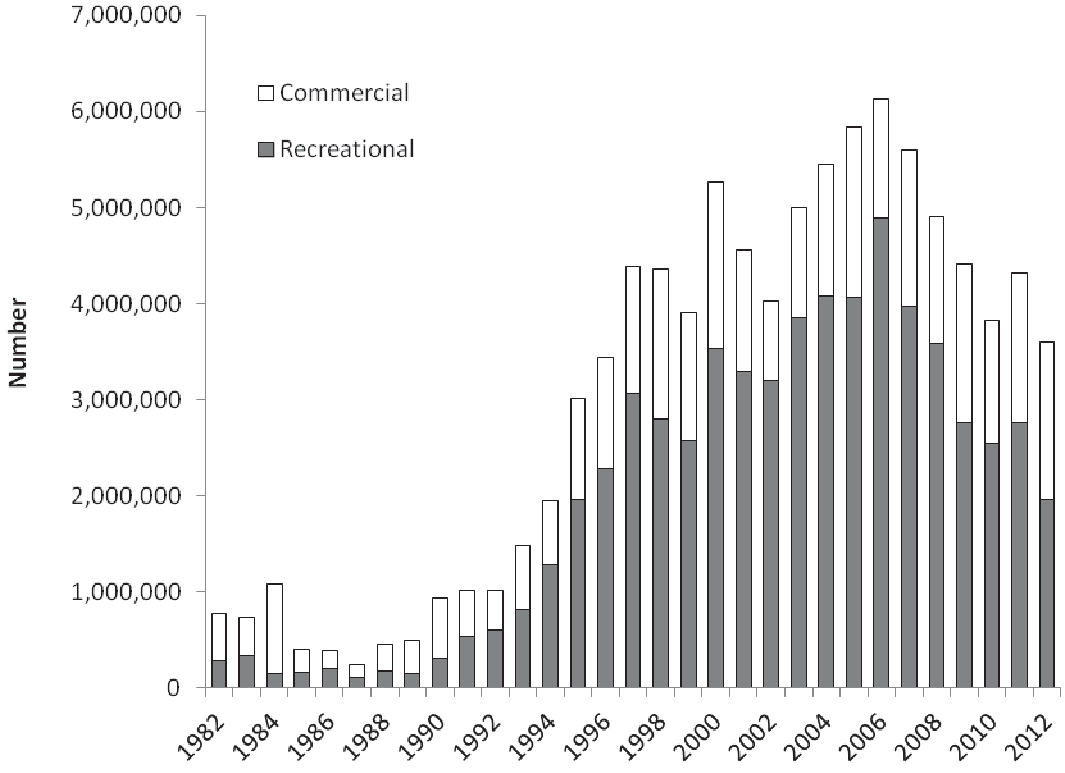

Figure B7. Total catch (numbers of fish) of Atlantic striped bass by fishery.

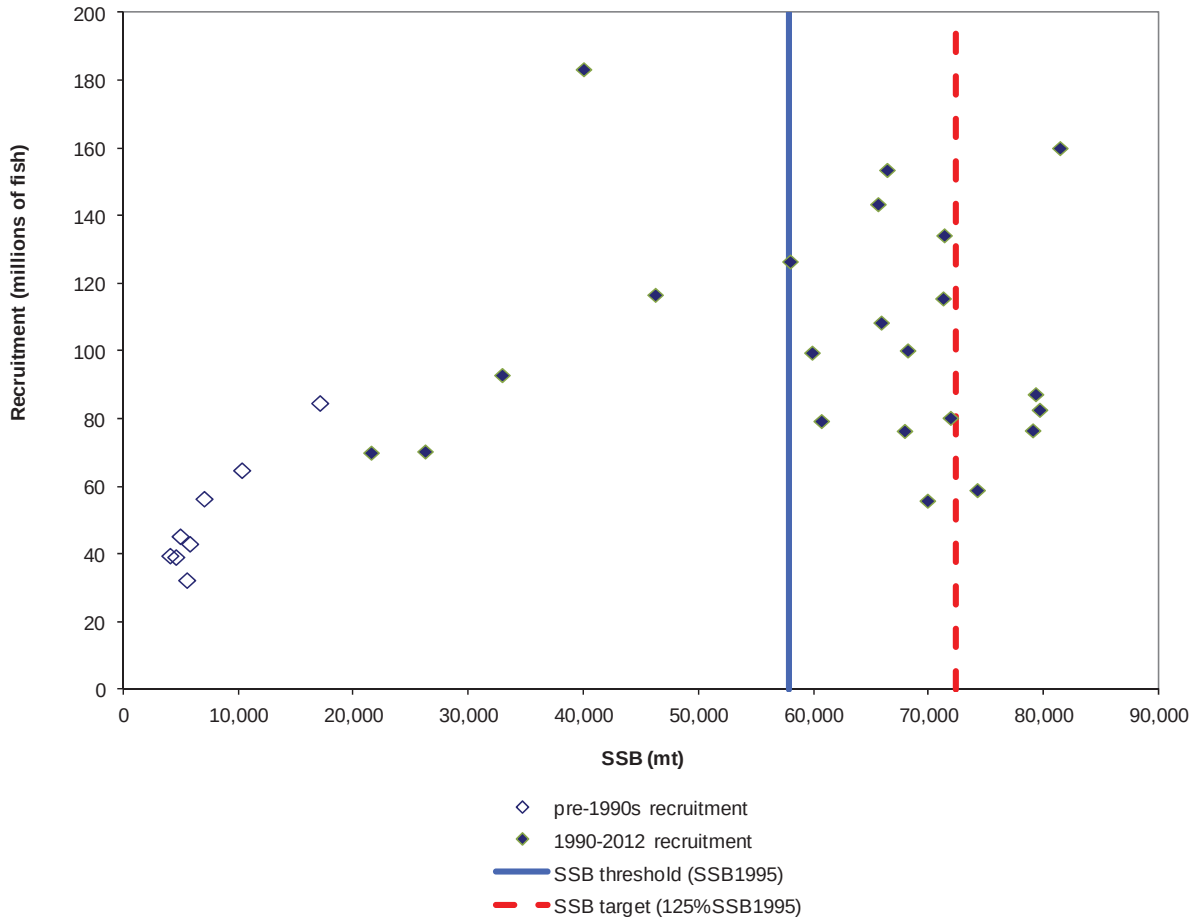

Figure B8. Striped bass. Recruitment estimates used to develop F reference points vs. spawning stock biomass. Pre-1990s estimates of recruitment were not used in F reference point projections. Vertical lines indicate SSB reference points from SAW/SARC57.

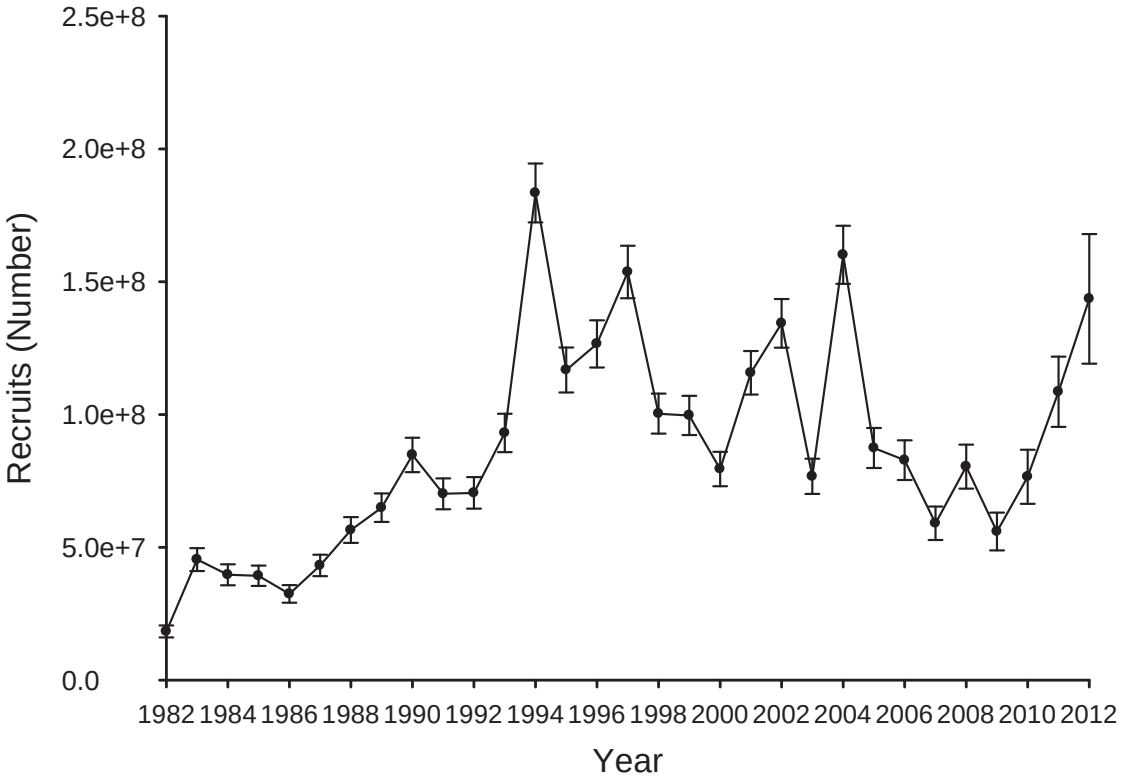

Figure B9. Model-estimated recruitment of age-1 striped bass. Error bars indicate ±1 SD.

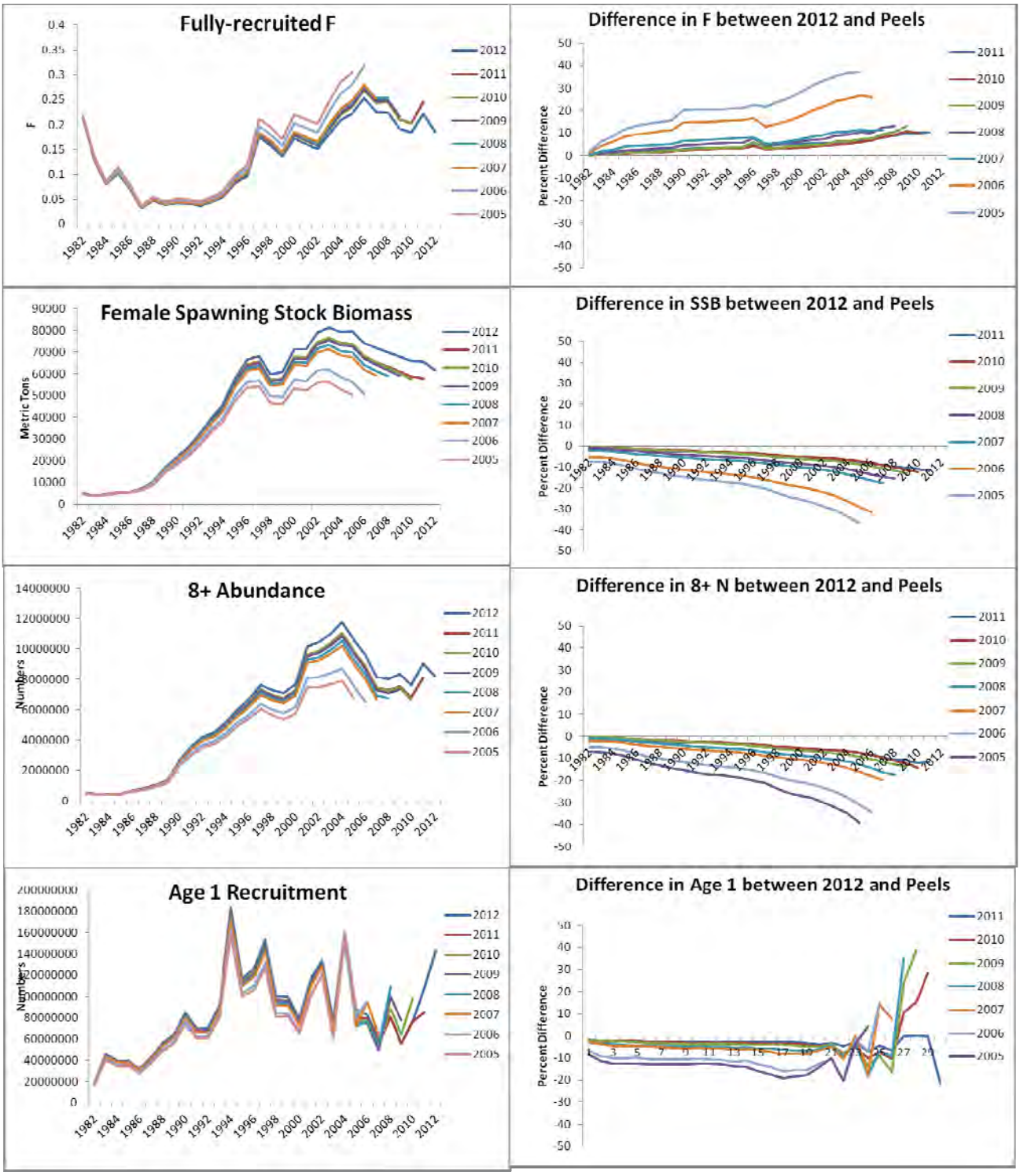

Figure B10. Retrospective analysis for preferred configuration of the striped bass SCA model.

Appendix: Stock Assessment Terms of Reference for SAW/SARC57, July 23-26, 2013
(To be carried out by SAW Working Groups) (v. 12/18/2012)

A. Summer flounder

1. Estimate catch from all sources including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.

2. Present the survey data available for use in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.), and explore standardization of fishery-independent indices*. Investigate the utility of commercial or recreational LPUE as a measure of relative abundance. Characterize the uncertainty and any bias in these sources of data. Describe the spatial distribution of the stock over time.

3. Review recent information on sex-specific growth and on sex ratios at age. If possible, determine if fish sex, size and age should be used in the assessment*.

4. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series (integrating results from TOR-3), and estimate their uncertainty. Explore inclusion of multiple fleets in the model. Include both internal and historical retrospective analyses to allow a comparison with previous assessment results and previous projections.

5. State the existing stock status definitions for "overfished" and "overfishing". Then update or redefine biological reference points (BRPs; point estimates or proxies for B_{MSY}, $B_{THRESHOLD}$, F_{MSY} and MSY) and provide estimates of their uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for BRPs. Comment on the scientific adequacy of existing BRPs and the "new" (i.e., updated, redefined, or alternative) BRPs.

6. Evaluate stock status with respect to the existing model (from previous peer reviewed accepted assessment) and with respect to a new model developed for this peer review.

    a. When working with the existing model, update it with new data and evaluate stock status (overfished and overfishing) with respect to the existing BRP estimates.

    b. Then use the newly proposed model and evaluate stock status with respect to "new" BRPs and their estimates (from TOR-5).

7. Develop approaches and apply them to conduct stock projections and to compute the statistical distribution (e.g., probability density function) of the OFL (overfishing level) and candidate ABCs (Acceptable Biological Catch; see Appendix to the SAW TORs).

    a. Provide annual projections (3 years). For given catches, each projection should estimate and report annual probabilities of exceeding threshold BRPs for F, and probabilities of falling below threshold BRPs for biomass. Use a sensitivity analysis approach in which a range of assumptions about the most important uncertainties in the assessment are considered (e.g., terminal year abundance, variability in recruitment).
    b. Comment on which projections seem most realistic. Consider the major uncertainties in the assessment as well as sensitivity of the projections to various assumptions.
    c. Describe this stock's vulnerability (see "Appendix to the SAW TORs") to becoming overfished, and how this could affect the choice of ABC.

8. Review, evaluate and report on the status of the SARC and Working Group research recommendations listed in most recent SARC reviewed assessment and review panel reports, as well as MAFMC SSC model recommendations from 2012. Identify new research recommendations.

(*: Completion of specific sub-task is contingent on analytical support from staff outside of the NEFSC.)

B. Striped bass**

1. Investigate all fisheries independent and dependent data sets, including life history, indices of abundance, and tagging data. Discuss strengths and weaknesses of the data sources. Evaluate evidence for changes in natural mortality in recent years.

2. Estimate commercial and recreational landings and discards. Characterize the uncertainty in the data and spatial distribution of the fisheries.

3. Use the statistical catch-at-age model to estimate annual fishing mortality, recruitment, total abundance and stock biomass (total and spawning stock) for the time series and estimate their uncertainty. Provide retrospective analysis of the model results and historical retrospective. Provide estimates of exploitation by stock component, where possible, and for total stock complex.

4. Use the Instantaneous Rates Tag Return Model Incorporating Catch-Release Data (IRCR) and associated model components applied to the Atlantic striped bass tagging data to estimate F and abundance from coast wide and producer area tag programs along with the uncertainty of those estimates. Provide suggestions for further development of this model.

5. Update or redefine biological reference points (BRPs; point estimates or proxies for B_{MSY}, SSB_{MSY}, F_{MSY}, MSY). Define stock status based on BRPs.

6. Provide annual projections of catch and biomass under alternative harvest scenarios. Projections should estimate and report annual probabilities of exceeding threshold BRPs for F and probabilities of falling below threshold BRPs for biomass. Use a sensitivity analysis approach covering a range of assumptions about the most important sources of uncertainty, including potential changes in natural mortality.

7. Review and evaluate the status of the Technical Committee research recommendations listed in the most recent SARC report. Indentify new research recommendations. Recommend timing and frequency of future assessment updates and benchmark assessments.

(**: These TORs were developed by the ASMFC Striped Bass Stock Assessment Subcommittee and Tagging Subcommittee, with approval from the Technical Committee and Management Board.)

Appendix to the SAW Assessment TORs:

Clarification of Terms

used in the SAW/SARC Terms of Reference

On "Acceptable Biological Catch" (DOC Nat. Stand. Guidel. Fed. Reg., v. 74, no. 11, 1-16-2009):

> *Acceptable biological catch (ABC)* is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of [overfishing limit] OFL and any other scientific uncertainty…" *(p. 3208) [In other words, OFL ≥ ABC.]*
>
> *ABC for overfished stocks.* For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan. *(p. 3209)*
>
> NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. (p. 3180)
>
> ABC refers to a level of ''catch'' that is ''acceptable'' given the ''biological'' characteristics of the stock or stock complex. As such, [optimal yield] OY does not equate with ABC. The specification of OY is required to consider a variety of factors, including social and economic factors, and the protection of marine ecosystems, which are not part of the ABC concept. (p. 3189)

On "Vulnerability" (DOC Natl. Stand. Guidelines. Fed. Reg., v. 74, no. 11, 1-16-2009):

> *"Vulnerability.* A stock's vulnerability is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MSY and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts to the fishery (e.g., loss of habitat quality)." (p. 3205)

Rules of Engagement among members of a SAW Assessment Working Group:

> Anyone participating in SAW assessment working group meetings that will be running or presenting results from an assessment model is expected to supply the source code, a compiled executable, an input file with the proposed configuration, and a detailed model description in advance of the model meeting. Source code for NOAA Toolbox programs is available on request. These measures allow transparency and a fair evaluation of differences that emerge between models.

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MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 24, 2013

TO: Council

FROM: Kiley Dancy, Staff

SUBJECT: Summer Flounder Management Measures for 2014-2016

The following materials are enclosed for Council consideration of the above subject:

1) Summary of Monitoring Committee Recommendations (includes summary table of SSC and Monitoring Committee recommended catch and landings limits)
2) September 2013 Scientific and Statistical Committee Meeting Report
3) Staff Recommendation Memo
4) Memo from North Carolina Division of Marine Fisheries on Flynet Fishery
5) Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports
6) Summer Flounder Advisory Panel Information Document

Links to the following additional reference materials can be found on the October 2013 briefing book page on the Council's website, at http://www.mafmc.org/briefing/october-2013:

1) Summer Flounder Assessment Summary Report for 2013
2) Summer Flounder Benchmark Stock Assessment Full Report
3) Summer Flounder Assessment Peer Review Panel Summary Report and Individual Reviewer Reports

Summer Flounder, Scup, and Black Sea Bass Monitoring Committee
Meeting Summary
September 19, 2013

Attendees: Paul Caruso (MA-DMF), Jason McNamee (RI-DFW), Mark Terceiro (NEFSC), Tom Baum (NJ-F&W), Greg Wojcik (CT-DEEP), Joe Cimino (VMRC), Rich Wong (DNREC), Steve Doctor (MD-DNR), Moira Kelly (NMFS NERO), John Maniscalco (NY-DEC), Tom Wadsworth (NC-DMF), Kiley Dancy (Council Staff), José Montañez (Council Staff), Rich Seagraves (Council Staff), Rick Robins (Council chair), Kirby Rootes-Murdy (ASMFC), Toni Kerns (ASMFC), Kurt Gottschall (CT-DEEP), Greg DiDomenico (GSSA)

Summer Flounder Monitoring Committee Comments and Recommendations

The Monitoring Committee does not currently have any formal control rules for the recommendation of ACTs. The Committee recognizes the need to develop ACT control rules or guidelines for addressing management uncertainty in the future, and plans to review the ASMFC's Management and Science Committee's forthcoming report on management uncertainty. This will be applicable to all three species. The Committee recognizes that management uncertainty exists for the summer flounder fisheries, but due to the recent performance of the fisheries, does not recommend a reduction from the ACLs for 2014-2016.

Preliminary MRIP estimates for 2013 Waves 2 and 3 indicate that recreational landings are comparable to 2012. The performance of the recreational fishery in recent years has resulted in substantial underharvest. The commercial landings monitoring and fishery closure system is timely and successful in holding the landings close to the quota. No additional reduction is needed from the commercial and recreational ACLs to the ACTs to address management uncertainty.

The Committee agreed with the staff recommendations for commercial fishery measures and RSA (no changes to the current minimum size (14 in), gear requirements, or exemption programs, and that up to 3% of TAL be made available to RSA program).

Scup Monitoring Committee Comments and Recommendations

The performance of the recreational and commercial fisheries for the past two years has resulted in substantial underharvest. The ABCs have increased significantly since 2010, however, the Committee noted that current multi-year specifications include decreasing ABCs for 2014-2015. The commercial landings monitoring and fishery closure system is timely and successful in managing the landings. No additional reduction is needed from the commercial and recreational ACLs to the ACTs to address management uncertainty.

The Winter II fishery possession limit is currently at 8,000 lb, and has not changed despite significant increases in quota. Currently three or fewer vessels are landing 10% or less of the Winter II allocation

(based on the threshold analysis presented in the AP Information Document). Industry sees potential to better utilize the full allocation and avoid regulatory discards if the possession limit were increased. The Monitoring Committee recommends a 30,000 lb possession limit, with a trigger that would reduce the possession limit to 1,000 lb once 80% of the Winter II quota is landed. It was noted that large possession limits, like the one recommended above and the 50,000 lb limit currently in place during Winter I, are possible in part because the SSB is currently estimated to be greater than 200% of SSB_{MSY}.

The industry request to move October from the Summer season to the Winter II season will require further analysis before the Monitoring Committee can make a recommendation on this issue.

The Committee agreed with the staff recommendation that no modifications are necessary for the gear requirements, minimum fish size, net mesh requirements, or scup pot escape vent size requirements. The Committee also recommended that up to 3% of TAL be made available to RSA program.

Black Sea Bass Monitoring Committee Comments and Recommendations

The Monitoring Committee notes that the commercial fishery has been under the commercial quota by an average of 2% over the last five years. Additionally, the commercial quota monitoring system is timely and is successful in managing the landings. Therefore, the Committee does not recommend any reduction in the commercial ACL to the commercial ACT.

The recreational fishery has had a history of large overages and moderate underages for the past five years. Realistically, the black sea bass recreational measures have not constrained the fishery to the recreational harvest limit during that time frame. Some of the management approaches put in place in recent years have increased management uncertainty in the fishery due to the application of the data available, for example, use of state estimates at the mode and wave level. To address management uncertainty in the recreational fishery, the data used while setting recreational measures later this year should be considered carefully by the Technical Committee and Management Board of the Atlantic States Marine Fisheries Commission. The Committee recommends no reduction in the recreational ACL to the recreational ACT.

The Monitoring Committee noted that by opening Wave 1 in the recreational fishery, an additional element of management uncertainty was added due to lack of catch accounting in all states except North Carolina. Federal VTR data from 2013 Wave 1 in the for-hire sector includes reported landings of black sea bass that account for approximately 5% of the 2013 recreational harvest limit. This data is self-reported, and does not include private vessels, and therefore should be considered a minimum estimate. The Committee recommends that the Council and Commission recommend to NOAA that Wave 1 VTR data be used in addition to the MRIP Wave 2-6 data when determining total 2013 recreational black sea bass catch, including for assessment use. The Committee also recommends that in future years if Wave 1 is to be open, that there be catch monitoring in place.

The Committee recommends no changes to the current commercial fishery measures, including size limits and gear restrictions, consistent with the staff recommendation. The Committee also recommended that up to 3% of TAL be made available to RSA program.

Table A. Summary of the SSC and Monitoring Committee recommendations for commercial and recreational catch and landings limits for summer flounder (2014-2016), scup (2014-2015), and black sea bass (2014-2015), compared to 2013 measures.

Resource	Year	ABC[1]	Comm. ACL[2]	Rec. ACL[2]	Comm. ACT[3]	Rec. ACT[3]	Comm. Quota[4]	Rec. Harvest Limit[4]
Summer Flounder	**2013 (current)**	**22.34 mil lb** (10,133 mt)	**12.11 mil lb** (5,941 mt)	**10.23 mil lb** (4,642 mt)	**12.11 mil lb** (5,941 mt)	**10.23 mil lb** (4,642 mt)	**11.44 mil lb** (5,189 mt)	**7.63 mil lb** (3,459 mt)
	2014	**21.94 mil lb** (9,950 mt)	**12.87 mil lb** (5,837 mt)	**9.07 mil lb** (4,113 mt)	**12.87 mil lb** (5,837 mt)	**9.07 mil lb** (4,113 mt)	**10.51 mil lb** (4,767 mt)	**7.01 mil lb** (3,178 mt)
	2015	**22.77 mil lb** (10,329 mt)	**13.34 mil lb** (6,049 mt)	**9.44 mil lb** (4,280 mt)	**13.34 mil lb** (6,049 mt)	**9.44 mil lb** (4,280 mt)	**10.74 mil lb** (4,870 mt)	**7.16 mil lb** (3,247 mt)
	2016	**24.25 mil lb** (10,999 mt)	**14.20 mil lb** (6,439 mt)	**10.05 mil lb** (4,560 mt)	**14.20 mil lb** (6,439 mt)	**10.05 mil lb** (4,560 mt)	**11.38 mil lb** (5,163 mt)	**7.59 mil lb** (3,442 mt)
Scup	**2013 (current)**	**38.71 mil lb** (17,557 mt)	**30.19 mil lb** (13,694 mt)	**8.52 mil lb** (3,863 mt)	**30.19 mil lb** (13,694 mt)	**8.52 mil lb** (3,863 mt)	**23.53 mil lb** (10,671 mt)	**7.55 mil lb** (3,425 mt)
	2014	**35.99 mil lb** (16,325 mt)	**28.07 mil lb** (12,734 mt)	**7.92 mil lb** (3,592 mt)	**28.07 mil lb** (12,734 mt)	**7.92 mil lb** (3,592 mt)	**21.95 mil lb** (9,955 mt)	**7.03 mil lb** (3,188 mt)
	2015	**33.78 mil lb** (15,320 mt)	**26.34 mil lb** (11,950 mt)	**7.43 mil lb** (3,370 mt)	**26.34 mil lb** (11,950 mt)	**7.43 mil lb** (3,370 mt)	**20.60 mil lb** (9,342 mt)	**6.60 mil lb** (2,992 mt)
Black Sea Bass	**2013 (current)**	**5.50 mil lb** (2,495 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.17 mil lb** (986 mt)	**2.26 mil lb** (1,024 mt)
	2014	**5.50 mil lb** (2,495 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.17 mil lb** (986 mt)	**2.26 mil lb** (1,024 mt)
	2015	**5.50 mil lb** (2,495 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.60 mil lb** (1,179 mt)	**2.90 mil lb** (1,315 mt)	**2.17 mil lb** (986 mt)	**2.26 mil lb** (1,024 mt)

[1]The SSC report provides additional details of the basis for the multi-year ABC recommendations which address scientific uncertainty [2]The sum of the commercial and recreational ACLs are equal to the ABC. [3]Monitoring Committee-recommended ACTs to address management uncertainty. [4]Landings only; a maximum RSA of 3% has been deducted.

Table B: Basis for summer flounder catch and landings limits, 2014-2016.

	Management Measure	MIL LBS	MT	Basis
2014	OFL	26.76	12,138	Projections
	ABC	21.94	9,950	Projections/Council risk policy
	ABC Landings Portion	18.06	8,191	Projections
	ABC Discards Portion	3.88	1,759	Projections
	Comm Discards Portion	2.03	923	52% of ABC discards portion, based on 2010-2012 average, from assessment
	Rec Discards Portion	1.84	836	48% of ABC discards portion, based on 2010-2012 average, from assessment
	Comm ACL	12.87	5,837	60% of ABC landings portion (per FMP) + 52% of ABC discards portion
	Rec ACL	9.07	4,113	40% of ABC landings portion (per FMP) + 48% of ABC discards portion
	Deduction for Mgmt Uncertainty	0	0	Monitoring Committee recommendation
	Comm ACT	12.87	5,837	Comm ACL - Mgmt Uncert
	Rec ACT	9.07	4,113	Rec ACL - Mgmt Uncert
	pre-RSA Comm Quota	10.84	4,915	Comm ACT – Comm Disc
	pre-RSA RHL	7.22	3,276	Rec ACT – Rec Disc
	Comm RSA Deduction (3%)	0.33	147	3% of Comm Quota
	Rec RSA Deduction (3%)	0.22	98	3% of RHL
	Adjusted Comm Quota	10.51	4,767	Comm Quota - RSA
	Adjusted RHL	7.01	3,178	RHL - RSA

	Management Measure	MIL LBS	MT	Basis
2015	OFL	27.06	12,275	Projections
	ABC	22.77	10,329	Projections/Council risk policy
	ABC Landings Portion	18.45	8,368	Projections
	ABC Discards Portion	4.32	1,961	Projections
	Comm Discards Portion	2.27	1,028	52% of ABC discards portion, based on 2010-2012 average, from assessment
	Rec Discards Portion	2.06	933	48% of ABC discards portion, based on 2010-2012 average, from assessment
	Comm ACL	13.34	6,049	60% of ABC landings portion (per FMP) + 52% of ABC discards portion
	Rec ACL	9.44	4,280	40% of ABC landings portion (per FMP) + 48% of ABC discards portion
	Deduction for Mgmt Uncertainty	0	0	Monitoring Committee recommendation
	Comm ACT	13.34	6,049	Comm ACL - Mgmt Uncert
	Rec ACT	9.44	4,280	Rec ACL - Mgmt Uncert
	pre-RSA Comm Quota	11.07	5,021	Comm ACT – Comm Disc
	pre-RSA RHL	7.38	3,347	Rec ACT – Rec Disc
	Comm RSA Deduction (3%)	0.33	151	3% of Comm Quota
	Rec RSA Deduction (3%)	0.22	100	3% of RHL
	Adjusted Comm Quota	10.74	4,870	Comm Quota - RSA
	Adjusted RHL	7.16	3,247	RHL - RSA

Table B, continued: Basis for summer flounder catch and landings limits, 2014-2016.

	Management Measure	MIL LBS	MT	Basis
2016	OFL	28.08	12,739	Projections
	ABC	24.25	10,999	Projections/Council risk policy
	ABC Landings Portion	19.56	8,871	Projections
	ABC Discards Portion	4.69	2,128	Projections
	Comm Discards Portion	2.46	1,116	52% of ABC discards portion, based on 2010-2012 average, from assessment
	Rec Discards Portion	2.23	1,012	48% of ABC discards portion, based on 2010-2012 average, from assessment
	Comm ACL	14.20	6,439	60% of ABC landings portion (per FMP) + 52% of ABC discards portion
	Rec ACL	10.05	4,560	40% of ABC landings portion (per FMP) + 48% of ABC discards portion
	Deduction for Mgmt Uncertainty	0	0	Monitoring Committee recommendation
	Comm ACT	14.20	6,439	Comm ACL - Mgmt Uncert
	Rec ACT	10.05	4,560	Rec ACL - Mgmt Uncert
	pre-RSA Comm Quota	11.73	5,323	Comm ACT – Comm Disc
	pre-RSA RHL	7.82	3,548	Rec ACT – Rec Disc
	Comm RSA Deduction (3%)	0.35	160	3% of Comm Quota
	Rec RSA Deduction (3%)	0.24	106	3% of RHL
	Adjusted Comm Quota	11.38	5,163	Comm Quota - RSA
	Adjusted RHL	7.59	3,442	RHL - RSA

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: 23 September 2013

TO: Richard M. Robins, Jr., MAFMC Chairman

FROM: John Boreman, Ph.D., Chair, MAFMC Scientific and Statistical Committee

SUBJECT: Report of the September 2013 Meeting of the MAFMC SSC

The SSC met in Baltimore, MD, on 17-18 September 2013 for the purposes of developing ABC recommendations for Bluefish, Spiny Dogfish, Summer Flounder, Scup, and Black Sea Bass in response to terms of reference provided by the MAFMC (Attachment 1). All five species were under a multi-year ABC specification in which the SSC reserved the right to revisit the ABC recommendation each year during the multi-year period. The SSC also discussed a report from the Scientific Uncertainty Subcommittee on criteria for setting multi-year ABCs, the outcome of the workshop held by the MAFMC last winter, potential topics for the next National SSC Workshop, the suggested list of research priorities that will be submitted to the MAMFC at the upcoming meeting. The meeting agenda is attached (Attachment 2).

A total of 14 SSC members were in attendance (Attachment 3), and a quorum was present for both days. Also in attendance were staff from the NMFS Northeast Fisheries Science Center and Northeast Regional Office, Council members and staff, representatives from the fishing industry, environmental advocacy groups, and the public.

Updated assessments were available for Bluefish and Spiny Dogfish, and a benchmark assessment was available for Summer Flounder. Because no predetermined tolerance limits were set for the degree of change in biological reference points that would trigger a new ABC, the SSC decided to follow the generic terms of reference for Bluefish and Spiny Dogfish, since the updated assessments constituted the best scientific information available. The generic terms of reference were also used for Summer Flounder due to the recent benchmark assessment that was cleared by the SARC. For Scup and Black Sea Bass, the SSC determined that there was no compelling scientific evidence to support changing the previously recommended ABCs for the 2014 and 2015 fishing years.

All documents cited in this report can be accessed via the MAFMC SSC website (http://www.mafmc.org/ssc-meetings/september-2013).

Bluefish

The SSC will provide a written report that identifies the following for up to two fishing years (i.e., 2014-2015):

1) The materials considered in reaching its recommendations;

- Wood, A. D. 2013. Bluefish 2013 stock assessment update. Coastal Pelagic Working Group, Northeast Fisheries Science Center, NOAA Fisheries. 38 pp.
- Armstrong, J. 2013. Staff memorandum to Chris Moore, dated 11 September 2013, entitled: "Bluefish ABC and Management Measures for 2014." 8 pp.
- Armstrong, J. 2013. Staff memorandum to Chris Moore, dated 17 September 2013, entitled: "Bluefish ABC and Management Measures for 2014 - revised." 8 pp.
- MAFMC Staff. 2013. Bluefish AP information document – August 2013. Mid-Atlantic Fishery Management Council. 15 pp.
- MAFMC Staff. 2013. 2013 Bluefish fishery performance report. Mid-Atlantic Fishery Management Council. 2 pp.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment;

The SSC designated the assessment as **Level 3**, because the structure of the assessment was unchanged from previous specification. There were no new estimates of uncertainties associated with maximum fishing mortality rate (OFL).

3) If possible, the level of catch (in weight) and the probability of overfishing associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold or, if appropriate, an OFL proxy;

The **OFL = 16,506 mt**, based on an F_{msy} of 0.19.

4) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock, the number of fishing years for which the ABC specification applies and, if possible, interim metrics that can be examined to determine if multi-year specifications need adjustment prior to their expiration;

The SSC recommends an **ABC = 11,082 mt** (24.4 million lb) for the 2014 fishing year, based on the control rule for Level 3 assessments. The SSC used an assumed CV of the OFL with a lognormal distribution of 100%, noting that the ratio of B/BMSY, based on mid-year estimates from 2013, is 0.8113, and that Bluefish exhibit a typical life history. The SSC applied the Council's policy of P* = 0.316. The projection is 67.1% of the catch at OFL. Since a benchmark assessment of Bluefish is scheduled for 2014, the SSC does not recommend ABCs for fishing years beyond 2014.

5) The most significant sources of scientific uncertainty associated with determination of OFL and ABC;

- There is a significant level of missing data involved in the age-length keys (ALKs), which are critical for development of the catch-at-age matrix;
- Concern exists about the application of aggregate trawl calibration coefficients (ALBATROSS IV vs BIGELOW), and their influence on the selectivity pattern and results of the assessment.

Also, some near shore areas previously sampled by the ALBATROSS IV are unavailable for sampling by the BIGELOW;
- Commercial discards are assumed to be insignificant, which may not be the case;
- Much of population biomass (~40%) is in the aggregated 6+ age group for which there is relatively little information;
- Questions have been raised about the uncertainty in the historical MRFSS/MRIP estimates in general, and are particularly relevant here given the highly episodic nature of Bluefish catches in the recreational fisheries coast wide; and
- The basis for the unusual bimodal selectivity curve used in the ASAP model is not well understood.
- The updated assessment shows a retrospective bias resulting in the model underestimating recruitment by upwards of 50% near the end of the time series.

6) Ecosystem considerations accounted for in the stock assessment, and any additional ecosystem considerations that the SSC took into account in selecting the ABC, including the basis for those additional considerations;

No additional information pertinent to ecosystem considerations was explicitly included in selecting the ABC.

7) Prioritized research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation;

- Evaluate amount and length frequency of discards from the commercial and recreational fisheries;
- Collect data on size and age composition of the fisheries by gear type and statistical area;
- Initiate fishery-dependent and fishery-independent sampling of offshore populations of Bluefish during the winter months (consider migration, seasonal fisheries, and unique selectivity patterns resulting in the bimodal partial recruitment pattern; consider if the migratory pattern results in several recruitment events); and
- Develop Bluefish index surveys (proof of concept), including abundance/biomass trend estimates for the offshore populations in winter.

8) A certification that the recommendations provided by the SSC represent the best scientific information available.

To the best of the SSC's knowledge, these recommendations are based on the best available scientific information.

Spiny Dogfish

The SSC will provide a written report that identifies the following for up to two fishing years (i.e., 2014-2015):

1) The materials considered in reaching its recommendations;

- Rago, P., and K. Sosebee. 2013. Update on the Status of Spiny Dogfish in 2013 and Projected Harvests at the Fmsy Proxy and Pstar of 40%. Northeast Fisheries Science Center, NOAA Fisheries. 51 pp.

- MAFMC staff memorandum from Jim Armstrong to Chris Moore: "Spiny dogfish ABC and Management Measures for 2014," dated September 12, 2013. 9 pp.
- MAFMC Staff. 2013 Spiny Dogfish AP information document – 2013. Mid-Atlantic Fishery Management Council. 14 pp.
- MAFMC Staff. 2013. 2013 Spiny Dogfish fishery performance report. Mid-Atlantic Fishery Management Council. 2 pp.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment;

Level 3. The assessment provides plausible estimates of the absolute levels of biomass and abundances, and the assessment also provides a plausible set of reference points that together represent the best available science. The SSC notes that the biological reference points were calculated outside of the assessment model. The SSC also believes that important sources of uncertainty were not incorporated into estimates for the biological reference points. Both concerns prevent this assessment from achieving a higher rank.

3) If possible, the level of catch (in weight) and the probability of overfishing associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold or, if appropriate, an OFL proxy;

The F_{msy} proxy is calculated from a projection model for which the finite rate of population increase = 1.0. For Spiny Dogfish, the F_{msy} proxy = 0.2439. This is equivalent to a catch of **OFL = 32,166 mt**, based on the projected biomass in 2014 and the assumption that the catch in 2013 will be equal to 24,709 mt (the ABC = ACL from last year).

4) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock, the number of fishing years for which the ABC specification applies and, if possible, interim metrics that can be examined to determine if multi-year specifications need adjustment prior to their expiration;

The SSC applied the Council's risk policy for a typical life history[1], an estimated B_{2014}/B_{msy} ratio > 1, and a CV of the OFL distribution of 100% assuming a lognormal distribution. Using these parameters, the Council's risk policy implies a P* = 0.40. Applying this P* to the OFL produces an **ABC = 27,596 mt**.

The SSC notes that the stock biomass is projected to decline in the future because of poor recruitment in earlier years, before recovering again. Current projections suggest that the ratio of (median $B_{current}$)/B_{msy} may be <1 for 2018-2023. As a result, the P* value developed by the Council's risk policy will be lower, thereby leading to a reduced ABC for these years.

The SSC recommends a 2-year ABC specification. The SSC recommends that ABC be calculated based on a constant F policy, which translates to an ABC in the subsequent year 2015 of **28,310 mt**.

The SSC will examine Spiny Dogfish discard rates, survey abundance trends (size composition, sex ratio and pup size), average size and sex in commercial landings, agreement between observed and predicted catch and survey forecasts, changes in Canadian landings, and the spatial distributions of catch and survey abundances each year of the specification to determine if the multiyear ABC should be abandoned.

[1.] The SSC notes that the assessment for Spiny Dogfish has been structured to account for many aspects of the unique life

history of this species.

5) The most significant sources of scientific uncertainty associated with determination of OFL and ABC;

- The assessment relies heavily on an assumed efficiency of the survey gear in developing minimal swept area estimates of biomass.
- Inter-annual differences in availability of the stock to the survey gear.
- F_{msy} proxy is based on a projection model that relies on a time-invariant selectivity estimated from data up to 2008. The assessment assumes selectivity has not changed subsequently, but may be variable.
- Both the F_{msy} proxy and the projections rely on a model that assumes constant pup survival and pup production rates. Empirical evidence suggests pup survival correlates positively with maternal size.
- Inconsistency between the estimation model and the projection model.
- Potential changes in fishery selectivity. Large increases in catches could induce changes in the overall selectivity pattern in the fishery.
- Potential inconsistency between the life history-based estimates of fishing mortality rates and the biomass reference points derived from the Ricker stock recruitment curve.
- Total discard estimates and estimated mortality of discarded dogfish.
- The revised estimate of biomass reference point is uncertain with an asymptotic CV of about 30%.
- The updated assessment shows a retrospective bias resulting in the model underestimating recruitment by upwards of 50% near the end of the time series.

6) Ecosystem considerations accounted for in the stock assessment, and any additional ecosystem considerations that the SSC took into account in selecting the ABC, including the basis for those additional considerations;

No explicit or specific ecosystem considers were included in the assessment. Furthermore, no additional ecosystem considerations were applied in calculating the ABC.

7) Prioritized research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation;

- Revise the assessment model to investigate the effects of stock structure or distribution, sex ratio, and size of pups on birth rate and first year survival of pups.
- Continue large scale (international) tagging programs, including conventional external tags, data storage tags, and satellite pop-up tags, to help clarify movement patterns and migration rates.
- Investigate the distribution of spiny dogfish beyond the depth range of current NEFSC trawl surveys, possibly by using experimental research or supplemental surveys.
- Continue aging studies for Spiny Dogfish age structures (e.g., fins, spines) obtained from all sampling programs (include additional age validation and age structure exchanges), and conduct an aging workshop for Spiny Dogfish, encouraging participation by NEFSC, Canada DFO, other interested state agencies, academia, and other international investigators with an interest in dogfish aging (US and Canada Pacific Coast, ICES).
- Evaluate ecosystem effects on Spiny Dogfish acting through changes in dogfish vital rates.

8) A certification that the recommendations provided by the SSC represent the best scientific information available.

To the best of the SSC's knowledge, these recommendations are based on the best available scientific information.

Summer Flounder

The SSC will provide a written report that identifies the following for up to two fishing years (i.e., 2014-2015):

1) The materials considered in reaching its recommendations;

- Southern Demersal Working Group. 2013. Summer Flounder stock assessment report for 2013. Northeast Fisheries Science Center, NOAA Fisheries. 474 pp.
- Southern Demersal Working Group. 2013. Summer Flounder assessment summary for 2013. Northeast Fisheries Science Center, NOAA Fisheries. 11 pp.
- MAFMC Staff. 2013. Summer Flounder Advisory Panel information document. Mid-Atlantic Fishery Management Council. 16 pp.
- MAFMC Staff. 2013. Summer Flounder, Scup, and Black Sea Bass fishery performance reports September 2013. Mid-Atlantic Fishery Management Council. 6 pp.
- Dancy, K. 2013. Staff memorandum to Chris Moore, dated 5 September 2013, entitled: "Summer Flounder Management Measures for 2014 and 2015." 10 pp.
- Wadsworth, T. 2013. Memo to Jessica Coakley, dated 7 August 2013, entitled: "Species composition and landings from the 2012 North Carolina flynet fishery." North Carolina Department of Environment and Natural Resources. 1 pp.
- Jones, C. M., R. Cook, J. Simmonds, and H. Sparholt. 2013. Summary report of the 57th Northeast Regional Stock Assessment Review Committee (SARC 57). Northeast Fisheries Science Center, NOAA Fisheries. 47 pp.
- Cook, R. 2013. Report on the 57th North East Regional Stock Assessment Review Committee (SARC 57). Prepared for Center for Independent Experts. 41 pp.
- Simmonds, E. J. 2013. Center for Independent Experts (CIE) Peer Review Report of: 57th Northeast Regional Stock Assessment Review Committee (SARC 57) on striped bass and summer flounder. Center for Independent Experts. 38 pp.
- Sparholt, H. 2013. Center for Independent Experts (CIE) Peer Review Report of the 57th Northeast Regional Stock Assessment Review Committee (SARC 57). Center for Independent Experts. 40 pp.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment;

The SSC determined the Summer Flounder assessment should be considered as a Level 3 assessment.

In a Level 1 assessment, the SSC would use the uncertainty around the OFL directly from the assessment. In a Level 2 assessment, the assessment provides an alternative level of uncertainty. In a Level 3 assessment, the SSC provides its own estimate of uncertainty. The SSC was not comfortable with defining the assessment as Level 1. Because no alternative level of uncertainty in OFL was provided in the assessment, the SSC is constrained to determine the Summer Flounder assessment as Level 3.

3) If possible, the level of catch (in weight) and the probability of overfishing associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold or, if appropriate, an OFL proxy;

The OFL for 2014 is **12,138 mt**, based on an F_{MSY} proxy of $F_{35\%}$=0.309. The probabilities of overfishing are provided in the response to TOR 4.

4) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock, the number of fishing years for which the ABC specification applies and, if possible, interim metrics that can be examined to determine if multi-year specifications need adjustment prior to their expiration;

The SSC determined the 2014 ABC to be **9,950 mt**.

In past Level 3 assessments, the SSC used a default CV for the OFL of 100%, based on a meta-analysis of statistical catch-at-age models. However, the SSC notes that, in contrast to other assessments presented to it, the Summer Flounder assessment has multiple sources of data, which are largely internally consistent, and it does a thorough job of exploring the impacts of sources of uncertainty on the estimated model fits. As a result, the SSC believes that the Summer Flounder stock assessment is considerably more accurate than other assessments of mid-Atlantic stocks and, therefore, considers use of the default CV=100% not appropriate. Accordingly, the SSC determined that it should use a CV = 60%. The SSC adopted this CV based on a presentation of the distribution of CVs in published simulation experiments in which the assessment model did fully reflect the underlying population dynamics.

The SSC recommends a three-year ABC specification. The approach to specifying ABC assumes the ABC was caught in the preceding year. The SSB in the current year is then updated based on the presumed catch, and the resulting SSB estimate is multiplied by the F_{MSY} proxy to provide the OFL for the current year. The Council's risk policy is applied to the OFL by using a 60% CV to calculate the ABC. Using this procedure, the relevant ABCs are:

Year	SSB	F	OFL	P* Value	**ABC**	Presumed Catch
2014	58,974	0.248	12,138	0.360	**9,950**	9,950
2015	61,709	0.255	12,275	0.378	**10,329**	10,329
2016	63,879	0.263	12,739	0.396	**10,999**	10,999

5) The most significant sources of scientific uncertainty associated with determination of OFL and ABC;

The most significant sources of uncertainty are:

- The potential for sex-specific differences in life history parameters.
- The existence of spatially distinct size distributions.
- NEFSC surveys and PMAFS fishery sampling confirm sexually-dimorphic and time-varying spatial differences in growth that are not fully accounted for in the stock assessment because not all fishery and survey catches are fully and independently sampled by sex.

- Landings from commercial fishery assume no under-reporting of Summer Flounder landings and so should be considered minimal estimates.
- The current assumption for M remains an ongoing source of uncertainty. M is highly influential on assessment results and impacts nearly all aspects of the assessment and evaluation of status.
- The stock-recruitment relationship could not be defined internally in the model and thus an F_{MSY} proxy was used to calculate the OFL.

6) Ecosystem considerations accounted for in the stock assessment, and any additional ecosystem considerations that the SSC took into account in selecting the ABC, including the basis for those additional considerations;

No explicit or specific ecosystem considerations (for example, trophic interactions or habitat) were included in the assessment. No additional information pertinent to ecosystem considerations was included in selecting the ABC.

7) Prioritized research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation;

The SSC recognizes the research recommendations provided in the assessment report. In addition, the SSC recommends research is conducted to:

- Evaluate uncertainties in biomass to determine potential modifications to OFL CV employed;
- Evaluate fully the sex- and size distribution of landed and discarded fish, by sex, in the Summer Flounder fisheries;
- Evaluate past and possible future changes to size regulations on retention and selectivity in stock assessments and projections; and
- Incorporate sex-specific differences in size at age into the stock assessment.

8) A certification that the recommendations provided by the SSC represent the best scientific information available.

To the best of the SSC's knowledge, these recommendations are based on the best available scientific information.

Scup

Review the extant multiyear ABC recommendations for Scup to determine if any changes are necessary based on the current best available science. If changes are deemed necessary, then the generic terms of reference would be followed.

The SSC determined that the available scientific evidence was not compelling enough to warrant a change to its ABC recommendations for 2014 and 2015. The SSC recommends an ABC of **16,325 mt** for 2014 and an ABC of **15,320 mt for 2015**.

The written materials the SSC considered in reaching this conclusion:

- MAFMC Staff. 2013. Scup Advisory Panel information document. Mid-Atlantic Fishery Management Council. 20 pp.

- MAFMC Staff. 2013. Summer Flounder, Scup, and Black Sea Bass fishery performance reports September 2013. Mid-Atlantic Fishery Management Council. 6 pp.
- Dancy, K. 2013. Staff memorandum to Chris Moore, dated 5 September 2013, entitled: "Scup Management Measures for 2014 and 2015." 10 pp.
- Linton, B., and M. Terceiro. 2013. Data Update of Scup (*Stenotomus chrysops*) for 2013. Northeast Fisheries Science Center. NOAA Fisheries. 99 pp.

Black Sea Bass

Review the extant multiyear ABC recommendations for Black Sea Bass to determine if any changes are necessary based on the current best available science. If changes are deemed necessary, then the generic terms of reference would be followed.

The SSC determined that the available scientific evidence was not compelling enough to warrant a change to its ABC recommendations for 2014 (ABC = **2,494 mt**). The SSC recommends extending this ABC level through the 2015 fishing season as well. The SSC also decided that the committee's responses to the last set of terms of reference for Black Sea Bass (Miller 2013) are still valid.

The written materials the SSC considered in reaching this conclusion:

- MAFMC Staff. 2013. Black Sea Bass Advisory Panel information document. Mid-Atlantic Fishery Management Council. 17 pp.
- MAFMC Staff. 2013. Summer Flounder, Scup, and Black Sea Bass fishery performance reports September 2013. Mid-Atlantic Fishery Management Council. 6 pp.
- Dancy, K. 2013. Staff memorandum to Chris Moore, dated 5 September 2013, entitled: "Black Sea Bass Management Measures for 2014 and 2015." 9 pp.
- Miller, T. 2013. Memorandum to Richard B. Robins, Jr., dated 30 January 2013, entitled: "Report of the January 23, 2013 Meeting of the MAFMC Scientific and Statistical Committee." 9 pp.

Additional SSC Comments Related to the ABC Recommendations

1. In light of the SSC's discussion of quality of the recent Summer Flounder assessment, the SSC tasked the Scientific Uncertainty Subcommittee with drafting additional guidance on how an assessment can be moved from a Level 3 to a Level 2. The current guidance is insufficient.
2. The SSC decided that more consistency is needed in how projections of stock biomass are done for the various species. The SSC Chair will name an *ad hoc* subcommittee to develop draft guidance for discussion at the winter 2014 meeting.
3. An *ad hoc* subcommittee was formed to investigate how to develop a satisfactory OFL for black sea bass, given that the recent assessment attempts have not been able to pass SARC review. The species is more model-challenged (or model-resistant) than data poor, but methods being considered by other SSCs for data poor stocks may be informative to the subcommittee's work. Members of the SSC who volunteered for the subcommittee are Tom Miller, Doug Vaughan, Olaf Jensen, and Mike Wilberg. The subcommittee is also hoping to add a member from the Northeast Fisheries Science Center who is familiar with stock assessment and data issues related to black sea bass (Jon Deroba or Gary Shepherd?).

Other Topics

Development of Criteria for Setting Multi-year ABCs

The SSC discussed the "rumble strip" approach developed by the SUN Subcommittee for evaluating the performance of multi-year ABC advice (http://www.mafmc.org/s/SUN-multi-year-report-8-30-13.pdf). The approach uses upper and lower bounds on multiple indices to determine if a stock is following an expected trajectory, similar to rumble strips along the sides of a road. The proposed indices for inclusion were kg/tow from the NMFS trawl survey, relative fishing mortality (catch divided by the trawl survey CPUE), and mean length in the NMFS trawl survey. Bounds are constructed for each index by calculating confidence intervals about a mean that represents the target value. If too many indices are outside their bounds, a re-evaluation is conducted to determine if any changes or responses are necessary with regard to the ABC recommendation. If a response is deemed necessary, it could include multiple options, such as alerting the Council that the stock is outside the expectations from the original ABC determination, requesting a new or updated stock assessment, or changing the ABC.

There was general agreement among the SSC members in attendance that the rumble strip approach looks promising, but several aspects could use refinement. Technical concerns were raised about the use of a potential default action of decreasing ABC if the stock appears worse than expected, with no symmetrical increase if stock conditions appear better than expected. Discussion revolved around the concern that the proposed ABC protocol would not address the National Standard 1 requirement of the Magnuson Stevens Act to achieve OY (i.e., the Council might miss taking advantage of situations where yield could be increased if rumble strips are triggered for positive reasons). Another issue raised was that, if ABC is constraining the catch, many of the indices could be highly correlated causing multiple indices to simply mirror the NMFS trawl survey. Other issues identified as requiring closer examination included choosing the appropriate confidence interval for rumble strip bounds (by species); identifying the base period when the stock was considered to be in a good condition (especially for data poor stocks); considering information from additional sources (i.e., NEAMAP, state surveys, etc.); identifying the number of rumble strips that, if triggered, would result in some response or action; and identifying the appropriate response or action.

There was general consensus on following points: during interim years of multi-year ABC specifications the SSC would evaluate the rumble strip analysis and, if triggered, the SSC would re-examine the multi-year ABC specification (i.e., take a closer look). [A suggested modification to the presented approach was that there would be no action required unless at least a 25% change in the ABC appeared to be warranted; if less than a 25% change was warranted, there would be no change to ABC but the SSC could request a new or updated stock assessment.] The SSC agreed that the SUN Subcommittee should continue work to refine the rumble strip analysis and identify appropriate responses based on the outcome of additional analysis. Next steps are to provide an update to the Council on work accomplished to date and to continue to refine the analysis. The SSC will review additional work conducted by the SUN at its winter 2014 meeting and a final report for Council consideration will be completed by April 2014.

Forage Workshop Overview and EAFM Update

The Council convened a workshop at its 11 April 2013 meeting in Raleigh, NC, to discuss the key issues relevant to forage fish assessment and management under the Magnuson-Stevens Act. Council staff

provided the SSC with an overview of the main points discussed at the workshop where a panel of experts discussed the role of forage species within ecosystems and best practices with respect to the harvest of forage species, taking their role(s) within ecosystems into account. This was the first of four workshops the Council intends to convene to discuss the major challenges it faces with respect to ecosystems approach to fisheries management (EAFM).

Understanding the roles that forage species play within ecosystems has emerged in the scientific literature as a key element in the development of EAFM. Forage species provide an important link between primary productivity and upper trophic levels within marine ecosystems. At the same time, forage species often support economically valuable fisheries through direct harvest. Recent scientific findings suggest that forage stocks may warrant special management consideration, especially with respect to achieving ecosystem level management goals and objectives. In addition, current National Standard 1 (NS1) guidelines recommend that consideration should be given to managing forage stocks for higher biomass than traditional MSY-based reference points (B_{msy}) to enhance and protect the marine ecosystem.

Dr. Ellen Pikitch (Stony Brook University) introduced the forage management issue and described the results of the Lenfest task force and other scientific research relative to forage fish exploitation and management. The Lenfest task force recommended reducing exploitation rates for forage stocks to about half of traditional MSY based reference points and to maintain forage stock biomass at about 40% of the unfished biomass to maintain their vital role in the ocean. Research published in *Science* (supported by the Marine Stewardship Council) reached similar conclusions.

Dr. Edward Houde (University of Maryland, SSC member) summarized the current scientific consensus on the need to manage forage fish more conservatively to preserve ecosystem structure and function, and then placed the issue within the context of Mid-Atlantic ecosystems. He briefly described Mid-Atlantic ecosystems and species that are likely important forage stocks (both managed and unmanaged). He also discussed options the Council should consider relative to the special management of forage species and described approaches to forage fish management taken by other Councils. The panel then discussed generic forage species definitions and concluded that it would be difficult to specify a universal forage fish definition, but endorsed the definition proposed by the Council's SSC. The panel also discussed the range of exploitation rates the Council should consider in development of an exploitation policy for forage stocks and the trade-offs between a more conservative exploitation policy for forage species and potential benefits for the ecosystem and higher trophic level predator species.

Dr. Robert Latour (Virginia Institute for Marine Studies, SSC member) discussed potential approaches the Council could take to assess and manage forage stocks. He noted the importance of articulating key ecosystem level objectives, as well as the limits of the data and science to support ecosystem-based management. He recommended that the Council build on current single species stock assessment models and incorporate predation mortality and climate drivers in stock assessments for forage species (this could be accomplished through stock assessment terms of reference). He also stressed the need for the Council to develop the science and policy aspects of forage fish assessment and management in harmony, and that the Council should carefully separate scientific and policy issues when developing its forage fish exploitation policy.

Dr. Sarah Gaichas (Northeast Fisheries Science Center) noted that the state of information, models, etc., currently available are sufficient to support an ecosystem approach to management and the development or forage management policy in the Mid-Atlantic. These models range from single species assessments, which treat predation mortality explicitly, to complex "end-to-end" ecosystem models. The challenge will be to bridge from single-species stock assessment models to multi-species models and, eventually,

to more sophisticated ecosystem level models. She also described other potential approaches to insuring adequate forage by managing at the level of functional groups. A key consideration that must be examined is an estimation of predator demands within the system and whether or not those demands are being met. The Council will be faced with a new level of policy when determining tradeoffs in predator consumption requirements when managing forage fish.

The workshop concluded with a discussion of possible paths forward for the Council in the development of forage fish management policy. Incorporation of consumption estimates by predators and species interactions in stock assessments could be accomplished through the addition of ecosystem terms of reference at the stock assessment level. The Council should also consider modification of its ABC control rules and risk policy with respect to forage species.
Based on the outcome of the discussion at the workshop, the Council has begun development of a forage exploitation policy, which will guide Council decision making at the FMP level as part of its EAFM Guidance Document. The EAFM Working Group reviewed and endorsed the following ABC control rule framework for forage species:

1. OFL determined based on MSA defined F_{msy} (or OFL Proxy)
2. SSC specifies ABC based on current risk policy with respect to "atypical" species (P* = 0.35) if M2 is not included in the stock assessment, otherwise set P* = 0.4.
3. Based on ecological/social/economic evaluation, Council could add additional ecosystem consideration buffer when specifying OY (aka "ecological set-aside") for forage stocks. The bounds for the ABC/OFL ratio under proposed OY framework for forage stocks become:
    a. 0.25 - 0.5 > ABC/OFL > 0.81 if M2 is adequately incorporated into stock assessment, else
    b. 0.25 - 0.5 > ABC/OFL > 0.726 (i.e., M2 is not adequately addressed). The Council could add additional buffers during specification of OY, but the lower bound would be 0.25 - 0.5.

The SSC reviewed the draft ABC protocol for forage species and generally endorsed the approach, but made several suggestions for the Council to consider as it moves forward on this issue. First, the Council should consider a range of ABC buffers for forage stocks in addition to the one proposed (i.e., apply the current ABC protocol for species with atypical life histories to forage species). For example, the 5% buffer for atypical stocks could be applied to forage stocks regardless of how M2 (predation mortality) is treated in the stock assessment, or even set larger buffers if appropriate. In addition, the Council could also consider modifying the biological reference points for forage stocks (i.e., establish more conservative fishing mortality rates that define overfishing). Regardless of the approach taken, the primary goal would be to maintain forage stocks at levels higher than B_{msy} as per the limited guidance provided in National Standard 1.

Next, staff provided an update on EAFM Guidance Document development. The Council has convened an EAFM working group whose members include S. Gaichas (NEFSC), J. Hare (NEFSC), T. Lederhouse (NMFS Habitat Division), K. Abrams (NMFS HQ), G. Depiper (NEFSC), and R. Seagraves (MAFMC) to assist in the development of the ecosystem guidance document. The EAFM WG has met once and discussed the major areas of emphasis within the EAFM Guidance Document. The current plan is to focus on four areas relevant to EAFM: species interactions (including forage fish assessment and management policy), climate change impacts, more fully incorporating habitat science in assessment and management, and incorporating social and economic considerations in future OY specifications and at the broader level of EAFM.

The next EAFM workshop is currently scheduled to be held in February 2014, and will examine issues related to climate change. The purpose of the workshop will be to provide the Council with the current state of knowledge relative to climate change and the expected range of impacts on living marine resources to assist the Council in the development of an adaptive fishery management framework that will effectively deal with ecosystem responses related to climate change. Results of the workshop will also inform the EAFM document concerning potential mechanisms to more fully account for climate change within the existing assessment and management system.

The SSC generally endorsed the current EAFM approach, but noted that the issue of fisheries within the context of the larger ecosystem and relative to competing uses of the ecosystem (offshore wind power development, petroleum extraction, etc.) was lacking in the current outline. One potential remedy would be to include examination of these issues under the social/economic section of the document. There was also considerable support by the SSC for the elevation of habitat science within the current process and especially within an ecosystem context.

cc: SSC Members, Lee Anderson, Chris Moore, Rich Seagraves, Kiley Dancy, Jim Armstrong, Jessica Coakley, Paul Rago, Mark Terceiro, Brian Linton, Tony Wood, Toni Kerns

Attachment 1

Mid-Atlantic Fishery Management Council
Scientific and Statistical Committee
September 17-19, 2013
Terms of Reference

A. Special Terms of Reference

Using information provided by September 3, 2013, the SSC will provide a written report that:

1) Reviews the extant multiyear ABC recommendations for spiny dogfish, bluefish, scup, black sea bass, and summer flounder to determine if any changes are necessary based on the current best available science. If changes are deemed necessary, then the generic terms of reference would be followed.

B. Generic Terms of Reference

The SSC will provide a written report that identifies the following for up to two fishing years (i.e., 2014-2015):

1) The materials considered in reaching its recommendations;
2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment;
3) If possible, the level of catch (in weight) and the probability of overfishing associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold or, if appropriate, an OFL proxy;
4) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock, the number of fishing years for which the ABC specification applies and, if possible, interim metrics that can be examined to determine if multi-year specifications need adjustment prior to their expiration;
5) The most significant sources of scientific uncertainty associated with determination of OFL and ABC;
6) Ecosystem considerations accounted for in the stock assessment, and any additional ecosystem considerations that the SSC took into account in selecting the ABC, including the basis for those additional considerations;
7) Prioritized research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation;
8) A certification that the recommendations provided by the SSC represent the best scientific information available.

Mid-Atlantic Fishery Management Council

Scientific and Statistical Committee

September 17-19, 2013

Admiral Fell Inn, Baltimore, MD; (410) 522-7380

Draft Agenda

Tuesday Sept 17, 2013

0900 SUN Subcommittee Report on interim multi-year specification metrics (Wilberg/Linton)

1200 Lunch

1300 Bluefish Multi-year ABC Evaluation (Jones/Armstrong/Wood)

1500 Spiny Dogfish Multi-year ABC Evaluation (Yiao/Armstrong/Rago)

1700 Adjourn

Wednesday September 18, 2013

0900 Summer flounder Multi-year ABC specification (Terceiro/Wilberg/Dancy)

1200 Lunch

1300 Scup Multi-year ABC evaluation (Gabriel/Dancy/Linton)

1430 Black sea bass ABC evaluation and future research/assessment (Miller/Dancy/Linton)

1630 Adjourn

Thursday September 19, 2013

0900 Review Forage Species ABC Protocol (Seagraves/Houde) and EAFM Progress Report

1000 Research needs prioritization (Seagraves)

1100 National SSC V – potential topics (Boreman/Seagraves)

1200 Meeting adjourns

Attachment 3

MAFMC Scientific and Statistical Committee
17-18 September 2013 Meeting
Baltimore, MD

Name	Affiliation
SSC Members in Attendance:	
John Boreman (SSC Chairman)	North Carolina State University
Tom Miller (SSC Vice-Chair)	University of Maryland - CBL
Mike Wilberg	University of Maryland - CBL
Doug Lipton	NMFS
Ed Houde	University of Maryland - CBL
Doug Vaughan	NMFS (retired)
Olaf Jensen	Rutgers
Tom Noji	NMFS Northeast Fisheries Science Center
Dave Secor	University of Maryland – CBL
Yan Jiao	Virginia Tech
Wendy Gabriel	NMFS Northeast Fisheries Science Center
Cynthia Jones	Old Dominion University
David Tomberlin (9/17 AM only)	NMFS Office of Science and Technology
Mark Holliday	NMFS Office of the Assistant Administrator
Others in attendance:	
Rich Seagraves	MAFMC staff
Kiley Dancy	MAFMC staff
Jose Montañez	MAFMC staff
Jim Armstrong (9/17 only)	MAFMC staff
Jessica Coakley (9/18 only)	MAFMC staff
Toni Kerns	ASMFC staff
Marin Hawke	ASMFC staff
Brian Linton	NMFS Northeast Fisheries Science Center
Mark Terceiro (9/18 only)	NMFS Northeast Fisheries Science Center
Paul Rago (9/17 only)	NMFS Northeast Fisheries Science Center
Tony Wood	NMFS Northeast Fisheries Science Center
Moira Kelly	NMFS Northeast Regional Office
Jenny Thompson	NMFS Sea Grant Fellow
Andrea Salute	University of Maryland – CBL
Rick Robins	MAFMC Chair
Lee Anderson	MAFMC Vice-chair
Greg DiDomenico	Garden State Seafood Association
Adam Nowalski (9/18 only)	MAFMC Advisor
Mike Luisi (9/18 only)	MAFMC member – MD DNR
Michael Schmidtke (9/18 only)	Old Dominion University
Antranik Kajajian (9/18 only)	Old Dominion University
Kristen Arnstead (9/18 only)	Old Dominion University
James Reinhardt (9/18 only)	Pew
Kirby Rootes-Murdy (9/18 only)	ASMFC staff
John Maniscalco (9/18 only)	NYDEC

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 5, 2013

TO: Chris Moore, Executive Director

FROM: Kiley Dancy, Staff

SUBJECT: Summer Flounder Management Measures for 2014 and 2015

Executive Summary

Based on the results of the benchmark stock assessment conducted in July 2013, the summer flounder stock is not overfished and overfishing is not occurring. The model estimated spawning stock biomass (SSB) was 112.96 million lb (51,238 mt) in 2012 (82% of the biomass at maximum sustainable yield, SSB_{MSY}). Staff recommend that current 2014 summer flounder specifications be revised to reflect the results of the latest benchmark stock assessment, and additionally that specifications be set for 2015. Based on the projections for summer flounder and the Council risk policy on overfishing a "typical" stock, the staff recommendation for acceptable biological catch (ABC) is 19.85 million lb (9,006 mt) in 2014, and 21.45 million lb (9,732 mt) in 2015.

For 2014, staff recommend a commercial ACL of 11.71 million lb (5,313 mt), and a recreational ACL of 8.14 million lb (3,693 mt). Staff also recommend a commercial annual catch target (ACT) of 11.71 million lb (5,313 mt), a commercial quota less discards and 3% research set-aside (RSA) of 9.52 million lb (4,317 mt), a recreational ACT of 8.14 million lb (3,693 mt), and a recreational harvest limit less discards and 3% RSA of 6.34 million lb (2,878 mt).

For 2015, staff recommend a commercial ACL of 12.64 million lb (5,734 mt), and a recreational ACL of 8.81 million lb (3,998 mt). Staff also recommend a commercial annual catch target (ACT) of 12.64 million lb (5,734 mt), a commercial quota less 3% research set-aside (RSA) of 10.13 million lb (4,596 mt), a recreational ACT of 8.81 million lb (3,998 mt), and a recreational harvest limit less 3% RSA of 6.76 million lb (3,064 mt).

Staff do not recommend any change to the current minimum fish size (14 inch-TL), gear requirements, or exemption programs (small mesh and North Carolina flynet). States that allocate 15% of their commercial quota to bycatch fisheries should continue to do so, and all other states should consider measures which reduce bycatch. Staff recommend up to 3% of the total allowable landings (TAL) be made available to the RSA Program.

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's Scientific and Statistical Committee (SSC) to provide ongoing scientific advice for fishery management decisions, including recommendations for ABC, preventing overfishing, and maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In addition, the Monitoring Committees established by the Fishery Management Plan (FMP) are responsible for developing recommendations for management measures designed to achieve the recommended catch limits.

The SSC will recommend an ABC for summer flounder that addresses scientific uncertainty, and the Monitoring Committee will recommend an annual catch target (ACT) and management measures to address management uncertainty. Based on the SSC and Monitoring Committee recommendations, the Council will make a recommendation to the National Marine Fisheries Service (NMFS) Northeast Regional Administrator. Because the FMP is cooperatively managed with the Atlantic States Marine Fisheries Commission, the Commission's Summer Flounder, Scup, and Black Sea Bass Board will meet jointly with the Council to recommend summer flounder management measures. In this memorandum, information is presented to assist the SSC and Monitoring Committee in developing recommendations for the Council and Board to consider for the 2014 and 2015 fishing years for summer flounder.

Additional relevant information about the fishery and past management measures is presented in the Fishery Performance Report for summer flounder developed by the Council and Commission Advisory Panels, as well as in the corresponding Summer Flounder Fishery Information Document prepared by Council staff.

Catch and Landings Update

Based on the 2013 benchmark stock assessment for summer flounder,[1] the 2012 commercial and recreational landings were 13.33 million lb (6,047 mt) and 6.29 million lb (2,853 mt), respectively. The 2012 commercial landings as of the week ending August 17, 2013, indicate that 81% of the coastwide commercial quota has been landed (Table 1).

[1] Northeast Fisheries Science Center. 2013. 57th Northeast Regional Stock Assessment Workshop (57th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 13-14; 39 p.

Table 1: The 2013 state-by-state quotas and the amount of summer flounder landed by commercial fishermen, in each state as of week ending August 17, 2013.

State	Commercial			Research
	Cumulative Landings (lb)	Quota (lb)[a]	Percent of Quota (%)	Set-Aside Landings (lb)
ME	0	5,441	0	0
NH	5	53	9	0
MA	758,141	791,236	96	780
RI	1,528,453	1,839,824	83	125,513
CT	244,714	258,205	87	8,031
NY	692,147	842,605	82	73,932
NJ	1,279,162	1,972,066	65	0
DE	0		0	0
MD	55,178	233,269	24	0
VA	4,544,788	5,040,501	90	0
NC	169,617	422,360	40	0
Other	0	0	0	0
Totals	**9,252,205**	**11,405,560**	**81**	**208,256**

[a] Quotas adjusted for research set-aside and overages. Source: NMFS Weekly Quota Report for week ending August 17, 2013.

Regulatory Review

In July 2012, the SSC met to specify an ABC for summer flounder for fishing year 2013, and consider specifying multi-year ABCs for up to three years. The SSC recommended two-year ABCs for summer flounder, for fishing years 2013 and 2014, given the expectation of new scientific information from the benchmark stock assessment in summer 2013.

The overfishing limit (OFL) was determined to be 29.81 million lb (13,523 mt), based on a threshold F = 0.310 ($F_{0.35}$) and 2012 projected biomass. The 2013 ABC associated with the OFL was 22.34 million lb (10,133 mt), based on the 2012 projected B/Bmsy = 92%, Council risk policy P* = 0.364, and a lognormal distribution with of CV = 100%. The associated 2013 commercial quota was 11.44 million lb (5,189 mt) and the recreational harvest limit was 7.63 million lb (3,461 mt). To derive a 2014 ABC, the SSC applied a constant F=0.224, resulting in a 2014 ABC of 22.24 million lb (10,088 mt). The associated 2014 commercial quota is 11.39 million lb (5,166 mt) and the recreational harvest limit is 7.59 million lb (3,443 mt).

The SSC considered summer flounder to be a level 3 assessment and considered the following to be the most significant sources of uncertainty: strong annual retrospective pattern in recruitment for recent year

classes; uncertainty in stock status because of lack of uncertainty estimation for the biological reference points (proxy used for F_{MSY}); uncertainty with respect to the estimate of natural mortality (M); no uncertainty characterization for the OFL; uncertainties resulting from the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment; projections used to calculate ABC being based on the assumption that the quota would be landed in 2012 and 2013; and the assumption of constant distribution (based on the 1982-2011 period) in recruitment used in the 2013 and 2014 stock projections.

Management measures in the commercial fishery other than quotas and harvest limits (i.e., minimum fish size, gear requirements, etc.) have remained generally constant since 1999.

Biological Reference Points

The benchmark 2013 SAW 57 assessment (NEFSC 2013) included updated biological reference points for summer flounder. The new fishing mortality threshold is $F_{MSY} = F_{35\%}$ (as the F_{MSY} proxy) = 0.309. The new biomass reference point, $SSB_{MSY} = SSB_{35\%}$ (as the SSB_{MSY} proxy) = 137.56 million lb (62,394 mt). The minimum stock size threshold, one-half SSB_{MSY}, is estimated to be 68.78 million lb (31,197 mt).

Stock Status and Projections

The most recent benchmark peer-reviewed assessment for summer flounder resulted from the July 2013 Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC 57).[2] The assessment utilizes an age-structured assessment model called ASAP. Documentation on this assessment and previous stock assessments, such as reports on stock status, including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) panelist reports, are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw/.

Results of the July 2013 benchmark assessment indicate that the summer flounder stock was not overfished and overfishing was not occurring in 2012 relative to the biological reference points from the 2013 SAW/SARC 57. The fishing mortality rate has been below 1.0 since 1997 and was estimated to be 0.285 in 2012, below the threshold fishing mortality reference point F_{MSY} = 0.309. SSB was estimated to be 113.0 million lb (51,238 mt) in 2012, about 82% of SSB_{MSY} = 137.6 million lb (62,394 mt). NMFS declared the summer flounder stock rebuilt in 2010, based on the 2011 assessment update.

Projections indicate that if the stock is fished at the fishing mortality threshold of $F_{MSY} = F_{35\%}$ (as F_{MSY} proxy) = 0.309 in 2014, median landings are projected to be 21.96 million lb (9,961 mt), with median discards of 4.80 million lb (2,177 mt), and median total catch 26.76 million lb (12,138 mt). This projected median total catch is equivalent to the Overfishing Limit (OFL) for 2014, and is less than the new MSY proxy of 28.54 million lb (12,945 mt).

[2] Northeast Fisheries Science Center. 2013. 57th Northeast Regional Stock Assessment Workshop (57th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 13-14; 39 p.

Basis for 2014 and 2015 ABC Recommendation

Input from the Council's Visioning and Strategic Planning processes as well as from the Advisory Panel Fishery Performance Reports highlight stakeholder interest in increasing the stability of fishery management measures. Last year, multi-year specifications were set for summer flounder for 2013 and 2014. However, given the availability of a new benchmark stock assessment, the 2014 measures currently in place should be revised to the reflect the updated assessment information, consistent with National Standard 2 of the Magnuson-Stevens Act. Two-year specifications are recommended in order to align the timeline for multi-year specifications for summer flounder, scup, and black sea bass. Because scup specifications are currently set through 2015, two-year specifications for each species at this stage would increase efficiency and promote stability by syncing the multi-year specifications schedule. Therefore, staff recommend summer flounder specifications be set for 2 years (revised for 2014, and set for 2015).

There are several methods that can be used to project multi-year OFLs and ABCs. The Stock Assessment Summary Report includes projections resulting in a slightly different set of ABCs than those recommended by staff, due to a different set of starting assumptions about the level of catch that will be taken in 2013. The projections made for the assessment summary report assume that a catch level associated with F_{MSY} = 0.309 will be taken in 2013, while the projections from which the staff recommendations are derived were made under the assumption that the removals in 2013 will be equal to the ABC of 10,133 mt. However, both sets of projections are arrived at using an iterative approach, where the "feedback" from a given level of removals influences the projected stock size for the following year, which is incorporated to update the OFLs and ABCs in those subsequent years.

For 2014, the OFL is 26.76 million lb (12,138 mt), and is defined by the fishing mortality threshold of F=0.309 and projected biomass in 2013 (124.92 million lb or 56,662 mt; 91% of SSB_{MSY}). It is clear that a recommendation for an ABC equal to the OFL would not account for any scientific uncertainty associated with estimation of OFL and the assessment of the summer flounder stock. Last year, the SSC classified the summer flounder assessment as level 3 and applied the Council risk policy for a typical stock using a lognormal OFL distribution with a CV equal to 100%. Staff recommend the same approach be applied to derive the 2014 ABC. Based on the 2013 projected SSB/SSB_{MSY} = 91%, Council risk policy P* = 0.360, and a lognormal distribution with a CV = 100%, staff recommend an ABC of 19.85 million lb (9,006 mt) in 2014.

For 2015, the OFL would be 27.53 million lb (12,489 mt). Based on the 2015 projected SSB/SSB_{MSY} = 96%, Council risk policy P* = 0.382, and a lognormal distribution with a CV = 100%, staff recommend of an ABC of 21.46 million lb (9,732 mt) (Table 2).

Other Management Measures

Recreational and Commercial ACLs

As defined in the Omnibus ACLs and AMs Amendment, the ABC is equivalent to the total allowable catch (TAC), and is equal to the sum of the commercial and recreational ACLs (Figure 1).

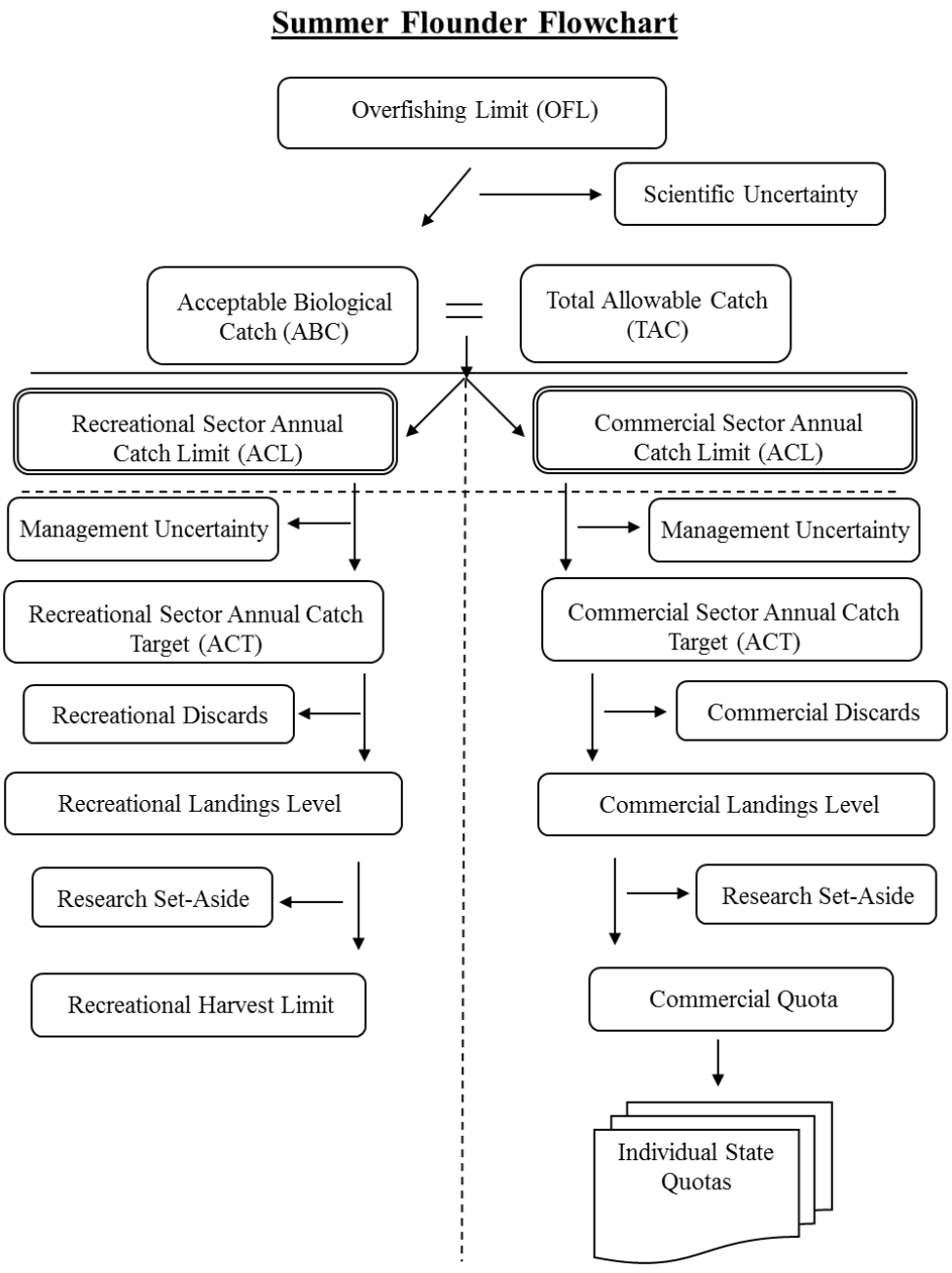

Figure 1: Flowchart for summer flounder catch and landings limits.

The ABCs for 2014 and 2015 are comprised of both landings and discards. Based on the allocation percentages in the FMP, 60% of the landings are allocated to the commercial fishery, and 40% to the recreational fishery (Table 2). Discards are apportioned based on the contribution from each fishing sector using the 2010-2012 average ratios; 46% of dead discards are attributable to the recreational fishery, 54% to the commercial.

Table 2: Allocation of the summer flounder ABC to the commercial and recreational ACLs for 2014 and 2015 (staff recommended).

		Catch (Landings + Discards)	Landings Portion	Discards Portion
2014	**ABC**	19.85 mil lb (9,006 mt)	16.35 mil lb (7,417 mt)	3.64 mil lb (1,649 mt)
	Commercial ACL	11.71 mil lb (5,313 mt)	9.81 mil lb (4,450 mt)	1.90 mil lb (862 mt)
	Recreational ACL	8.14 mil lb (3,693 mt)	6.54 mil lb (2,967 mt)	1.60 mil lb (727 mt)
2015	**ABC**	21.46 mil lb (9,732 mt)	17.41 mil lb (7,897mt)	4.05 mil lb (1,835 mt)
	Commercial ACL	12.64 mil lb (5,734 mt)	10.45 mil lb (4,738 mt)	2.20 mil lb (996 mt)
	Recreational ACL	8.81 mil lb (3,998 mt)	6.96 mil lb (3,159 mt)	1.85 mil lb (839 mt)

Considerations for ACTs

The Summer Flounder Monitoring Committee will be responsible for recommending annual catch targets (ACTs) for the Council to consider. The relationships between the recreational and commercial ACTs and other catch components are given in Figure 1. The Monitoring Committee may provide other recommendations relevant to setting catch limits consistent with the Magnuson-Stevens Act. The Monitoring Committee should consider all relevant sources of management uncertainty in the summer flounder fishery and provide the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. The ACTs, technical basis for ACT recommendations, and sources of management uncertainty would be described and provided to the Council.

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

The sector-specific landings performance for recent years indicates that although the recreational fishery has been somewhat variable in its performance, recreational landings have been under the recreational harvest limits for the past four years (Table 3). The commercial fishery has reported landings levels very

near the commercial quotas for the last several years, indicating that quota monitoring systems in place are effective in allowing timely reactions to landings levels that approach quotas (Table 3). Staff recommend no reduction in catch from the recreational or commercial ACL, so that each sector's ACT would be set equal to the ACL.

Table 3: Commercial and recreational fishery performance relative to quotas and harvest limits, 2008-2012.

Year	Commercial Landings (mil lb)[1]	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb)	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2008	9.13	9.32	-2%	8.13	6.21	+31%
2009	10.69	10.74	0%	5.99	7.16	-16%
2010	13.07	12.79	+2%	5.11	8.59	-41%
2011	16.56	17.38	-5%	5.95	11.58	-49%
2012	13.31	12.73	5%	6.29	8.49	-26%
5-yr Avg.	-	-	0%	-	-	-20%

Commercial Quota, Recreational Harvest Limit, and Research Set-Aside

The landings-based allocations (i.e., commercial 60%, recreational 40%) were maintained in the derivation of the sector-specific ACLs and ACTs, such that the sum of the sector-specific landings levels (TALs) will be equal to overall TAL (Table 2). Based on the staff recommended ACLs and ACTs given above and a 3% research set-aside deduction, the commercial quota in 2014 would be 9.52 million lb (4,317 mt) and the recreational harvest limit is 6.34 million lb (2,878 mt). In 2015, the commercial quota would be 10.13 million lb (4,596 mt) and the recreational harvest limit would be 6.76 million lb (3,064 mt). The commercial quota would be divided amongst the states based on the allocation percentages given in Table 4.

Table 4: The summer flounder allocation formula for the commercial fisheries in each state.

State	Allocation (%)
ME	0.04756
NH	0.00046
MA	6.82046
RI	15.68298
CT	2.25708
NY	7.64699
NJ	16.72499
DE	0.01779
MD	2.03910
VA	21.31676
NC	27.44584
Total	100

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 2014 and 2015 will not be determined until after the first four waves of the previous year's recreational landings are reviewed. These data will be available in October 2013 (for fishing year 2013) and October 2014 (for fishing year 2014). The Monitoring Committee will meet in November of each year to review these landings data and make recommendations regarding changes in the recreational management measures (i.e., possession limit, minimum size, and season). Given the performance of the recreational fishery relative to the recreational harvest limit in recent years, management measures (i.e., minimum size, possession limits, and seasons) should be implemented that are designed to prevent the recreational ACL from being exceeded.

Gear Regulations and Minimum Fish Size - Commercial Fishery

Amendment 2 to the Summer Flounder FMP contains provisions that allow for changes in the minimum fish size and minimum net mesh provisions. Current regulations require a 14 inch-TL minimum fish size in the commercial fishery and a 5.5 inch diamond or 6 inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder, i.e., 200 lb in the winter and 100 lb in the summer. The minimum fish size and mesh requirements may be changed through specifications based on the recommendations of the Monitoring Committee. Staff do not recommend any changes to the minimum fish size or mesh provisions.

Exemption Programs

Vessels landing more than 200 lb of summer flounder, east of longitude 72° 30.0'W, from November 1 through April 30, and not using a 5.5" minimum mesh (diamond) or 6" minimum mesh (square) net, are required to obtain a small mesh exemption program (SMEP) permit from NMFS. The FMP requires that sea sampling data be reviewed annually to determine if vessels fishing seaward of the line, with smaller

than the required minimum mesh size and landing more than 200 lb of summer flounder, are discarding more than 10% of their summer flounder catch. Staff evaluated the available Northeast Fisheries Observer Program (NEFOP) data for the period from November 1, 2012 to April 30, 2013. These data indicate that a total of 374 trips were observed east 72° 30.0'W; 158 of these trips landed summer flounder (Table 5). Of those 158 trips that landed summer flounder, 81 reported using small mesh and 50 landed more than 200 lb of summer flounder. Of those 50 trips, 6 trips discarded more than 10% of their catch. The percentage of trips that met all these criteria relative to the total number of observed trips east of 72° 30.0'W is 1.6% (6 trips/374 trips). The prior year percentage of trips that met the criteria was about 1%. Based on this information, staff recommend no change in the SMEP program.

In addition, vessels fishing with a two-seam otter trawl flynet are exempt. Specifically, flynets have large mesh in the wings that measure 8 to 64 inches, the belly of the net has 35 or more meshes that are at least 8 inches, and the mesh decreases in size throughout the body of the net to 2 inches or smaller. Only North Carolina has a flynet fishery at present. The supplemental memo from Tom Wadsworth dated August 7, 2013 indicates that summer flounder comprised less than 0.05% of the total landings by flynet in North Carolina in 2012. Therefore, staff recommend no change to this exemption program.

Table 5: Numbers of trips that meet specific criteria based on observer trips from November 1, 2012 to April 30, 2013.

November 1, 2012 – April 30, 2013	**Trips**
Trips with tows east of 72° 30' W Longitude	374
That landed summer flounder	158
That used small mesh	81
That landed more than 200 lb of summer flounder	50
Number that discarded >10% of summer flounder catch	6
Total discards (lb) from those 3 trips	657
Total landings (lb) from those 3 trips	3,133
Total catch (lb) from those 3 trips	3,790

Bycatch

Fishermen from a few states have indicated that the commercial regulatory discards associated with the summer flounder quotas are a problem. As such, the states that allocate 15% of their quota to bycatch fisheries should continue to do so, and all other states should consider measures to reduce bycatch.

North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries

Pat McCrory
Governor

Dr. Louis B. Daniel III
Director

John E. Skvarla, III
Secretary

Memorandum

To: Jessica Coakley, MAFMC

From: Tom Wadsworth, NCDMF

Date: August 7, 2013

Subject: Species composition and landings from the 2012 North Carolina flynet fishery

Table 1 provides the species composition and landings in pounds from the North Carolina flynet fishery in 2012. Individual landings listed as "other species" are not reported because the data are confidential and cannot be distributed to sources outside the NC Division of Marine Fisheries (North Carolina General Statute 113-170.3 (c)). Confidential data can only be released in a summarized format that does not allow the user to track landings or purchases to an individual. Summer flounder flynet landings were among the confidential data but less than 2,000 lb were landed, trips landing summer flounder had less than 200 lb per trip, and the landings accounted for less than 0.05% of the total flynet landings. Note that flynet landings for all species were markedly lower than in 2011. This is largely due to shoaling of Oregon Inlet and the consequent lack of access to important landing ports in 2012. Many 2012 flynet landings by the NC fleet were instead made in Virginia or other states.

Table 1. Species and landings for 2012 NC flynet fishery

Species	Weight (lb)	Percent
Croaker	314,244	97.28%
Squid, Loligo	1,143	0.35%
Other Species	7,628	2.36%
Total	323,015	

Other Species
Bluefish
Butterfish
Dogfish, Smooth
Drum, Black
Flounders (Paralichthid)*
Monkfish (Whole)
Sea Bass, Black
Sea Mullet (whiting, kingfish)
Triggerfish
Trout (Gray Trout)

* Landings of Flounders (including summer flounder) were < 2,000 lb and < 0.05% of total flynet landings

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Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports
September 2013

The Mid-Atlantic Fishery Management Council's (Council's) Summer Flounder, Scup, and Black Sea Bass Advisory Panel met jointly with the Atlantic States Marine Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass Advisory Panels on September 10, 2013 to review fishery information documents for all three species and develop Fishery Performance Reports (FPRs) based on advisor perspectives on catch and landings patterns and other trends in these fisheries.

Council Advisory Panel members present: Joan Berko (NJ), Carl Benson (NJ), Ross Pearsall (RI), Adam Nowalsky (NJ), Robert Allen (VA), Greg DiDomencio* (NJ), Skip Feller* (VA), Monty Hawkins (MD), Harry Doernte (VA), Jim Lovgren* (NJ), James Fletcher (NC), Willy Hatch (MA), Joe O'Hara (MD)

Commission Advisory Panel members present: James Tietje (MA), Robert Busby (NY), John Conway (CT), Marc Hoffman (NY), Paul Risi (NY), Paul Forsberg (NY), Skip Feller* (VA), Jim Lovgren* (NJ), Victor Bunting (MD), Bill Shillingford (NJ), Bob Meimbresse (NJ), James Craddock (NC), Greg DiDomencio* (NJ)

Others present: Michael Luisi (MAFMC/ASMFC), David Tomberlin (MAFMC SSC)

*Serve on both Council and Commission Advisory Panels.

Summer Flounder

Market and Economic Issues

Advisors are concerned about the proposed reduction in quota from 2013 to 2014 compared to what was expected when 2014 specifications were set last year. The advisors commented that a quota reduction of this magnitude will have devastating economic impacts. Due to economic losses sustained due to Hurricane Sandy, many marinas and tackle stores are relying on the summer flounder fishery to finance rebuilding and repair costs. Advisors noted that abundance and availability observed on the water is not what is reflected in the biomass estimates in the 2013 assessment. Catch per unit effort is not adequately taken into account and used to judge the health of the stock. Observations on the water indicate that the stock appears to be robust and availability is high. The advisors would like an explanation of what triggered a change in stock size estimates and changes in reference points in the assessment. The advisors would like the Scientific and Statistical Committee (SSC) to address these issues by exploring a potential elevation of the stock level designation of the 2013 stock assessment, and exploring the use of a Coefficient of Variation (CV) narrower than the 100% that has been used in the past.

The overall economy and increasing costs, such as the cost of fuel, continue to be a concern for the summer flounder fisheries.

Environmental and Ecological Issues

The effects of Hurricane Sandy continue to have negative impacts on the fisheries in New York and New Jersey. Advisors are concerned that this has not been reflected in any of the catch estimates.

Summer flounder biomass appears to be shifting increasingly to the northeast, which is not being picked up by the surveys, in part due to the elimination of the winter survey. The winter commercial fishery has observed a large shift in biomass of fish to the east and to deeper and colder waters, which is not being reflected in the Science Center surveys. These shifts in biomass could reflect a potential range expansion, given that the fishery in the south is still robust.

Sand sharks, dogfish, and skates are competing with summer flounder for prey, particularly for sand eels. The biomass of dogfish is high and having a negative impact on summer flounder via competition for prey. Ecosystem-based management is often discussed but has not been implemented, and advisors continue to be concerned about the use of single-species management. Additionally, scientists and managers should incorporate more information about potential effects of cyclical and long-term changes in environmental conditions.

Management Issues & Management Induced Effort Shifts

Advisors are concerned that the high recreational size limits are resulting in an increase in the targeting of larger females, a trend that is harmful to the stock.

The advisors expressed concern that the transition from the Marine Recreational Fisheries Statistical Survey (MRFSS) to the Marine Recreational Information Program (MRIP) for recreational data was supposed to facilitate more timely and accurate estimates of recreational catch, but estimates are in fact coming out later. MRIP does not use the number of fishermen in each state, and effort estimates could be improved by using the angler registry.

The advisors are concerned that the change from MRFSS to MRIP is not resulting in improved estimates of effort. Effort for this year is expected to be down in New York and New Jersey due to loss of infrastructure as the result of Hurricane Sandy. The MRIP survey has not advanced to the point where it can adequately capture reductions in effort relative to any potential increase in success rates (catch per angler trip). This will result in estimated landings which could be inflated due to the inability of MRIP to reflect the reduction in effort. The advisors would like the SSC to consider how varying levels of harvest in 2013 could impact the 2014 Acceptable Biological Catch (ABC) recommendation and beyond. The recreational landings have been under the recreational harvest limit for several years, yet the ABC recommendation for the subsequent year is made assuming that the full ABC will be taken.

Since the majority of the recreational fishery occurs in state waters, and given potential shifts in biomass, the issue of outdated state allocations needs to be addressed, or coastwide or regional measures should be considered.

Other Issues

Advisors perceive a lack of commitment to multi-year specifications given that multi-year specifications were set last year that now are being changed (due to the timing of the benchmark stock assessment).

Research Recommendations

In regards to the draft RSA research recommendation reading:

> Evaluate the length, weight, and age compositions of landed and discarded fish in the summer flounder fisheries (recreational and commercial) by sex. Focus should be placed on age sampling of summer flounder 24 inches or larger in total length, using paired hard part samples (i.e., scales, and when possible, otoliths).

The advisors questioned the benefit of this recommendation to the recreational community from the mid-to-southern range of the management unit. Advisors commented that there are other priorities that would provide more benefit to the fisheries.

Additionally, advisors suggested adding research recommendations for:

- Performing a search of available data to determine whether summer flounder school by sex and area.
- Further promotion of the sex-specific modeling work introduced during the last assessment that was not fully utilized.
- An evaluation of the impacts of predation on summer flounder, particularly by spiny dogfish.

Scup

Market and Economic Issues

Given the past reductions in quota, the commercial industry expects that the market and the demand for scup will increase. Concerns remain about the market share for scup being overtaken by tilapia.

The overall economy and increasing costs, such as the cost of fuel, continue to be a concern for the scup fishery. The cost of fishing trips has increased significantly due to rising fuel costs.

Environmental and Ecological Issues

The effects of Hurricane Sandy continue to have negative impacts on the fisheries in New York and New Jersey. Advisors are concerned that this has not been reflected in any of the catch estimates.

The advisors are concerned that the change from MRFSS to MRIP is not resulting in improved estimates of effort. Effort for this year is expected to be down in New York and New Jersey due to loss of infrastructure as the result of Hurricane Sandy. The advisors commented that the MRIP survey has not advanced to the point where it can adequately capture reductions in effort relative

to any potential increase in success rates (catch per angler trip). This will result in estimated landings which could be inflated due to the inability of MRIP to reflect the reduction in effort.

One advisor commented that black sea bass may be displacing scup from habitat in some areas near Cape Cod.

Management Issues & Management Induced Effort Shifts

Advisors commented that a complete and thorough re-evaluation of the scup Gear Restricted Areas (GRAs) is needed. One of the main goals of the GRAs was to rebuild scup, and that has been successful. The GRAs are currently in locations that are not useful. This analysis should also include an evaluation of lost revenue for squid and whiting fisheries.

Advisors question the justification for the decrease in quotas from 2013-2015 despite high stock size and increasing biomass. The advisors commented that the decreasing trend in quota combined with an expected increasing trend in effort could eventually result in quota overages and fishery closures. The SSC should consider how varying levels of harvest in 2013 could impact the 2014 ABC recommendation and beyond. The commercial and recreational landings have been under the harvest limits and quotas for several years, yet the ABC recommendation for the subsequent year is made assuming that the full ABC will be taken.

The Winter II fishery possession limit is currently 8,000 lb, and has not changed despite significant increases in quota. The Monitoring Committee (MC) should analyze what an appropriate trip limit should be (one recommendation from an advisor is 30,000 lb and/or a weekly cumulative trip limit of 30,000 lb). An increase in the Winter II possession limit would reduce regulatory discards.

The MC should also re-evaluate the timing and duration of the Summer fishery, and explore a reduction in the duration of the Summer fishery to May to September (shifting October into the Winter II fishery).

Recreational effort has increased for scup in Long Island Sound, in part because of the increased availability of larger scup. Scup are abundant and heavily targeted by the recreational fishery, benefitting other fisheries (such as striped bass) by relieving pressure on those fisheries. In Massachusetts, effort has also shifted to scup as the result of more restrictive regulations in other fisheries such as black sea bass.

Black sea bass

Market and Economic Issues

For the pot and trap fishery, the prices of sink rope and buoys are increasing with increasing fuel prices. Sink ropes must be replaced after disturbances like Hurricane Sandy.

In the for-hire sector, the combination of higher size limits and shorter seasons has resulted in vessels having to fish farther offshore to find retainable fish in some states. Increasing fuel costs

and other costs have made black sea bass trips less economically beneficial to the for-hire sector than in past years.

Environmental and Ecological Issues

The effects of Hurricane Sandy have been numerous, including bottom disturbances, and spring southerly winds contributing to colder waters, causing black sea bass to show up later in the season for some fisheries.

One of the advisors noted that observed discard mortality due to barotrauma is increasing as the result of having to fish farther offshore in deeper water.

The advisors also noted that although there has been no contraction observed at the southern end of the black sea bass range, an expansion into more northern waters has been observed. Advisors are concerned that the fish now being observed north of Cape Cod are missed in the trawl surveys and are not taken into account in the stock assessment.

Management Issues & Management Induced Effort Shifts

Advisors conveyed a lack of confidence in the recreational MRIP estimates provided for black sea bass. The large fluctuations in the estimates from year to year are a problem, as is the variability in the regulations. Some advisors expressed concern that the current regulations are suppressing opportunities to harvest a stock that they understand to be very abundant.

In the recreational fishery, the advisors commented that moving toward regional measures rather than state by state would be beneficial to the fishery. There is a desire to see the fishery open year-round, especially for the southern states. The southern states would benefit from a winter fishery, from November-February. In the north, the winter fishery has a relatively small overall impact on the stock, and it is good for business to keep the fishery going during that time.

Some advisors noted that management measures are impacting the ability to land the commercial quotas in some states. For example, in New Jersey, the trip limits are preventing full utilization of the quota by draggers.

One advisor noted that in the pot/trap fishery, fishing under lobster regulations causes complications when trap tags need to be changed. Decisions must be made in advance about how many tags are allocated to lobster vs. sea bass traps, so any changes in black sea bass regulations or quota result in a difficult and time-consuming process to change tags.

In some states such as Maryland and Delaware, black sea bass regulations are putting increased pressure on slow-growing Tautog stocks.

Other Issues

One advisor requested an examination of the effects of residual rocket fuel on black sea bass in the mid-Atlantic.

Advisors also commented that proceeds from black sea bass RSA should contribute more directly to black sea bass-related research.

Research Recommendations

The advisors discussed the list of RSA and other research recommendations and suggested:

- A study of the fish that being observed in increasing numbers at the northern end of the range. Advisors recommended that another coastwide tagging study be conducted, with a focus on migration and on the northern portion of the stock.
- Advisors expressed support for the existing research recommendation to explore a spatially-structured stock assessment model for black sea bass.
- An evaluation of the site fidelity of black sea bass.
- A review of potential fishery-induced modifications in the genetics of the black sea bass population, including changes in reproductive ability and growth rates.

Summer Flounder Advisory Panel Information Document[1]

August 2013

Management System

The Fishery Management Plan (FMP) for summer flounder became effective in 1988, and established the management unit for summer flounder (*Paralichthys dentatus*) as the U.S. waters in the western Atlantic Ocean from the southern border of North Carolina northward to the U.S.-Canadian border. The FMP also established measures to ensure effective management of the summer flounder resource. There are two management entities that work cooperatively to develop fishery regulations for this species: the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fishery Management Council (MAFMC), in conjunction with the National Marine Fisheries Service (NMFS) as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and Federal waters (3-200 miles offshore).

The commercial and recreational fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. Summer flounder was under a stock rebuilding strategy beginning in 2000 until it was declared rebuilt in 2011. The Summer Flounder FMP, including subsequent Amendments and Frameworks, are available on the Council website at: http://www.mafmc.org/fisheries/fmp/sf-s-bsb.

Basic Biology

Detailed information on summer flounder life history and habitat requirements can be found in the document titled "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999), available at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. Information contained in that document is summarized below.

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Adult summer flounder exhibit strong seasonal inshore-offshore movements, normally inhabiting shallow coastal and estuarine waters during the warmer months of the year and remaining offshore during the colder months.

[1] Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of July 2013, unless otherwise noted.

Summer flounder habitat includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas from the Gulf of Maine through North Carolina. They are opportunistic feeders, and their prey includes a variety of fish and crustaceans. While the natural predators of adult summer flounder are not fully documented, larger predators (e.g., large sharks, rays, and monkfish) probably include summer flounder in their diets.

Male and female growth rates vary substantially, with males growing more slowly. Males rarely live longer than 10 years, whereas females may live for up to 20 years (Bolz et al. 1999) and attain weights of about 25 lbs. Based on an analysis of NEFSC Fall Survey maturity data from 1992-1997, the median length at maturity (50^{th} percentile, L_{50}) was estimated as 27.0 cm (10.6 inches) for male summer flounder, 30.3 cm (11.9 inches) for female summer flounder, and 27.6 cm (10.9 inches) for the sexes combined (NEFSC 2008). The median age of maturity (50^{th} percentile, A_{50}) for summer flounder was determined to be 1.1 years for males, 1.4 years for females, and 1.2 years for both sexes combined (NEFSC 2008).

Status of the Stock

An age-structured assessment program (ASAP) was used in the 2013 peer-reviewed summer flounder stock benchmark stock assessment (57^{th} Stock Assessment Workshop; NEFSC 2013). As of August 2013, the Stock Assessment Workshop (SAW) Report is undergoing the final steps of the peer review and publication processes. The finalized report, along with the Stock Assessment Review Committee (SARC) panelist reports, will be available in September 2013, online at the NEFSC website: http://www.nefsc.noaa.gov/saw/. Previous stock assessment reports, assessment updates, and peer review panelist reports are also available at the site above.

Preliminary results of the 2013 benchmark assessment indicate that the summer flounder stock was not overfished or subject to overfishing in 2012, relative to the new biological reference points derived from the SAW 57 assessment. Fishing mortality (F) was estimated to be 0.285 in 2012, below the updated threshold fishing mortality reference point of F_{MSY} = 0.309 (Figure 1). Spawning Stock Biomass (SSB) was estimated to be 113.0 million lb (51,238 mt) in 2012, 18% below the updated SSB_{MSY} = 137.6 million lb (62,394 mt). The summer flounder stock was previously under a rebuilding plan, but was declared rebuilt in 2010 based on the 2011 assessment update.

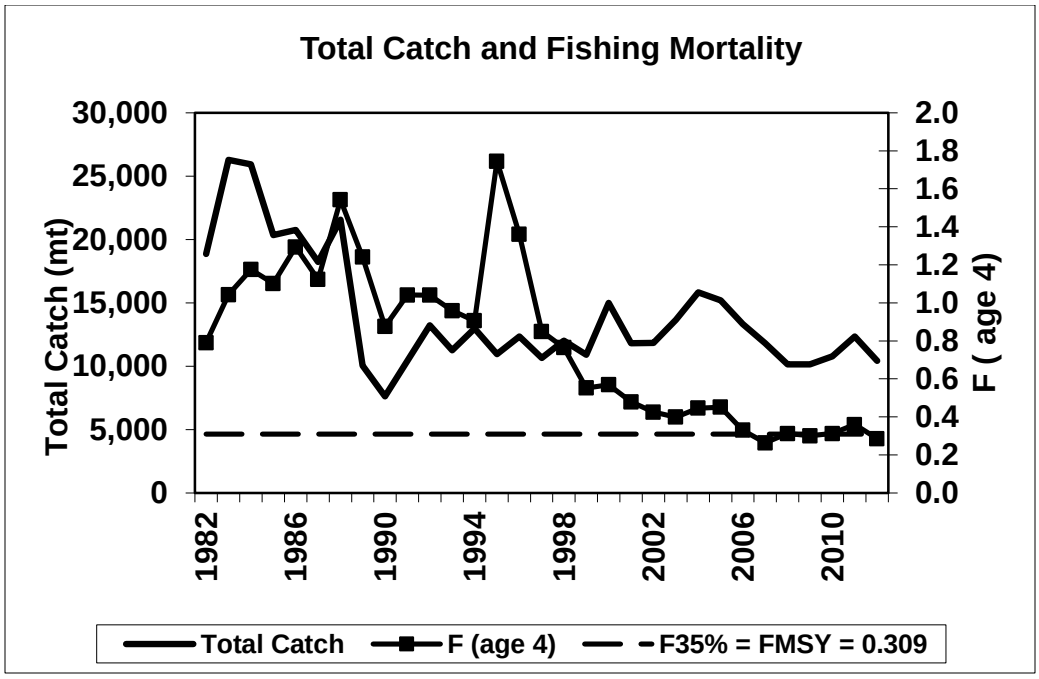

Figure 1: Total fishery catch and fully-recruited fishing mortality (F, peak at age 4) of summer flounder. The horizontal dashed line is the 2013 SAW/SARC57 fishing mortality reference point proxy. Source: NEFSC 2013.

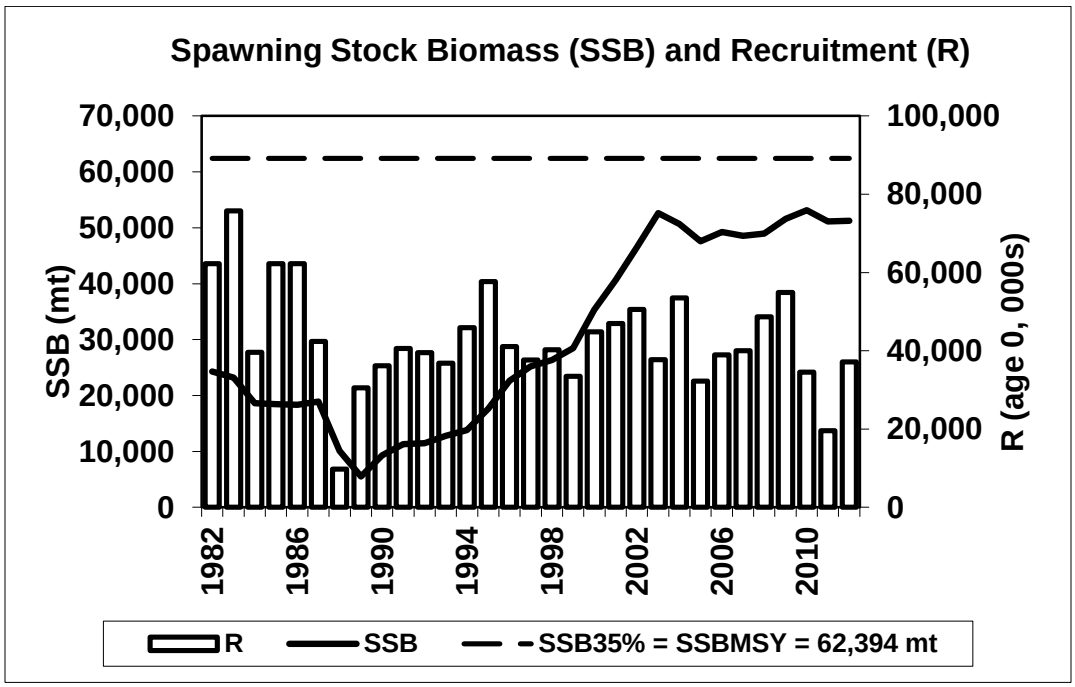

Figure 2: Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) by calendar year. The horizontal dashed line is the 2013 SAW/SARC57 biomass reference point proxy. Source: NEFSC 2013.

Fishery Performance

There are significant commercial and recreational fisheries for summer flounder. The summer flounder stock is managed primarily using output controls (catch and landings limits), with 60 percent of the landings being allocated to the commercial fishery as a commercial quota and 40 percent allocated to the recreational fishery as a recreational harvest limit.

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for summer flounder. Permit data for 2012 indicates that 870 vessels held commercial permits for summer flounder. Total (commercial and recreational) landings declined in the early 1980's to a low of 14.4 million lb in 1990, and in 2012 were about 20 million lb total (Figure 3).

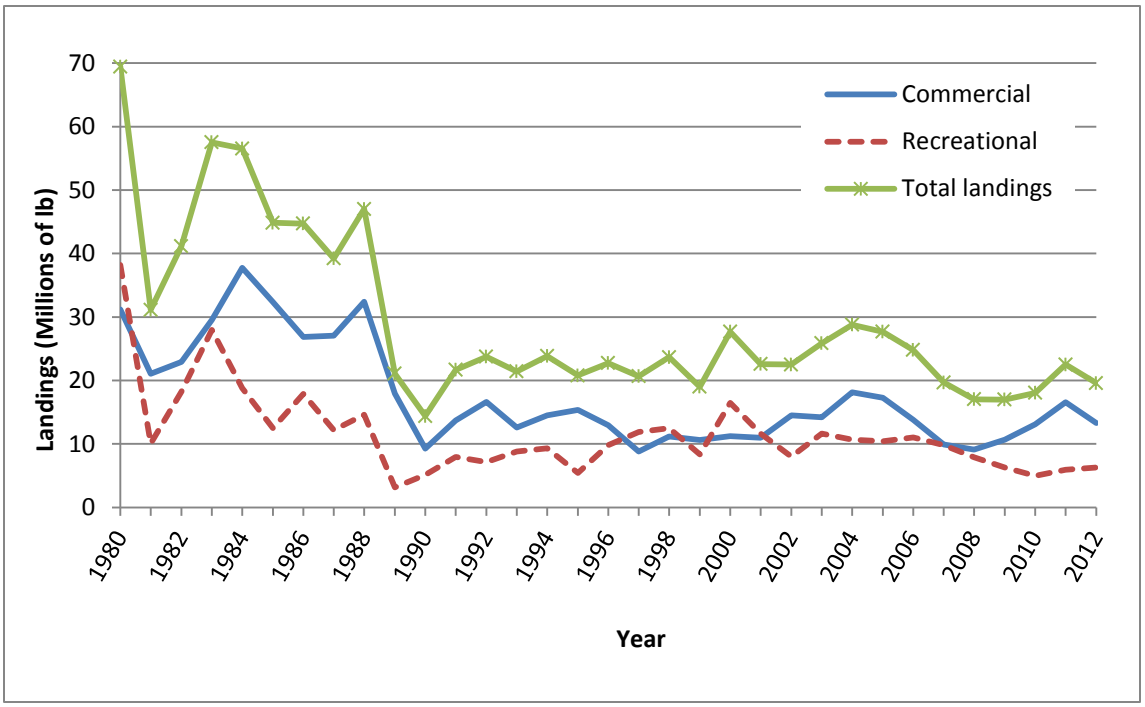

Figure 3: Commercial and Recreational U.S. Summer Flounder Landings (Pounds) from Maine-North Carolina, 1980-2012.

Table 1 summarizes the summer flounder management measures for the 2003-2014 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2009, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest). The commercial quota is divided among the states based on the allocation percentages given in Table 2, and each state sets measures to achieve their state-specific commercial quotas.

Table 1: Summary of summer flounder management measures and landings for 2003 through 2014.

Management measures	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014[d]**
ABC (m lb)	NA	NA	NA	NA	NA	NA	21.50	25.5	33.95	25.58	22.34	22.24
TAC (m lb)	NA	NA	NA	NA	NA	NA	20.90	25.5	33.95	25.58	22.34	22.24
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	12.11	12.05
Com. quota-adjusted (m lb)[c]	13.87	16.76	17.90	13.94	9.79	9.32	10.74	12.79	17.38	12.73	11.44	11.39
Com. landings	14.22	18.14	17.25	13.81	9.90	9.13	10.69	13.07	16.57	13.31	NA	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.58	10.23	10.19
Rec. harvest limit-adjusted (m lb)[c]	9.28	11.21	11.98	9.29	6.68	6.21	7.16	8.59	11.58	8.49	7.63	7.59
Rec. landings	11.64	10.65	10.42	11.00	9.80	7.90	6.30	4.97	5.96	6.29	NA	NA
Com. fish size (in)	14	14	14	14	14	14	14	14	14	14	14	14
Com. Min. mesh size (in, diamond)	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]
Recreational measures	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	NA

[a]Whole Net. [b]State-specific conservation equivalency (CE) measures. [c]Adjusted for Research Set-Aside and projected discards. NA=Not applicable or not yet available. [d] These reflect the regulations currently set for summer flounder in 2014, however, the Council and ASFMC will review new stock assessment information in October 2013 and may revise as necessary.

Table 2: State-by-state percent share of commercial summer flounder allocation.

State	Allocation (%)
ME	0.04756
NH	0.00046
MA	6.82046
RI	15.68298
CT	2.25708
NY	7.64699
NJ	16.72499
DE	0.01779
MD	2.03910
VA	21.31676
NC	27.44584
Total	100

NMFS statistical areas are shown in Figure 4. VTR data suggest that statistical area 616, which includes Hudson Canyon, was responsible for the highest percentage of the catch, with statistical area 612 having the majority of trips that caught summer flounder (Table 3).

Table 3: Statistical areas that accounted for at least 5 percent of the summer flounder catch in 2012 and associated number of trips, NMFS VTR data.

Statistical Area	Summer Flounder Catch (percent)	Summer Flounder Trips (N)
616	18.55	511
537	18.15	1578
613	11.36	1956
612	9.79	2550
626	6.85	170
622	6.32	199

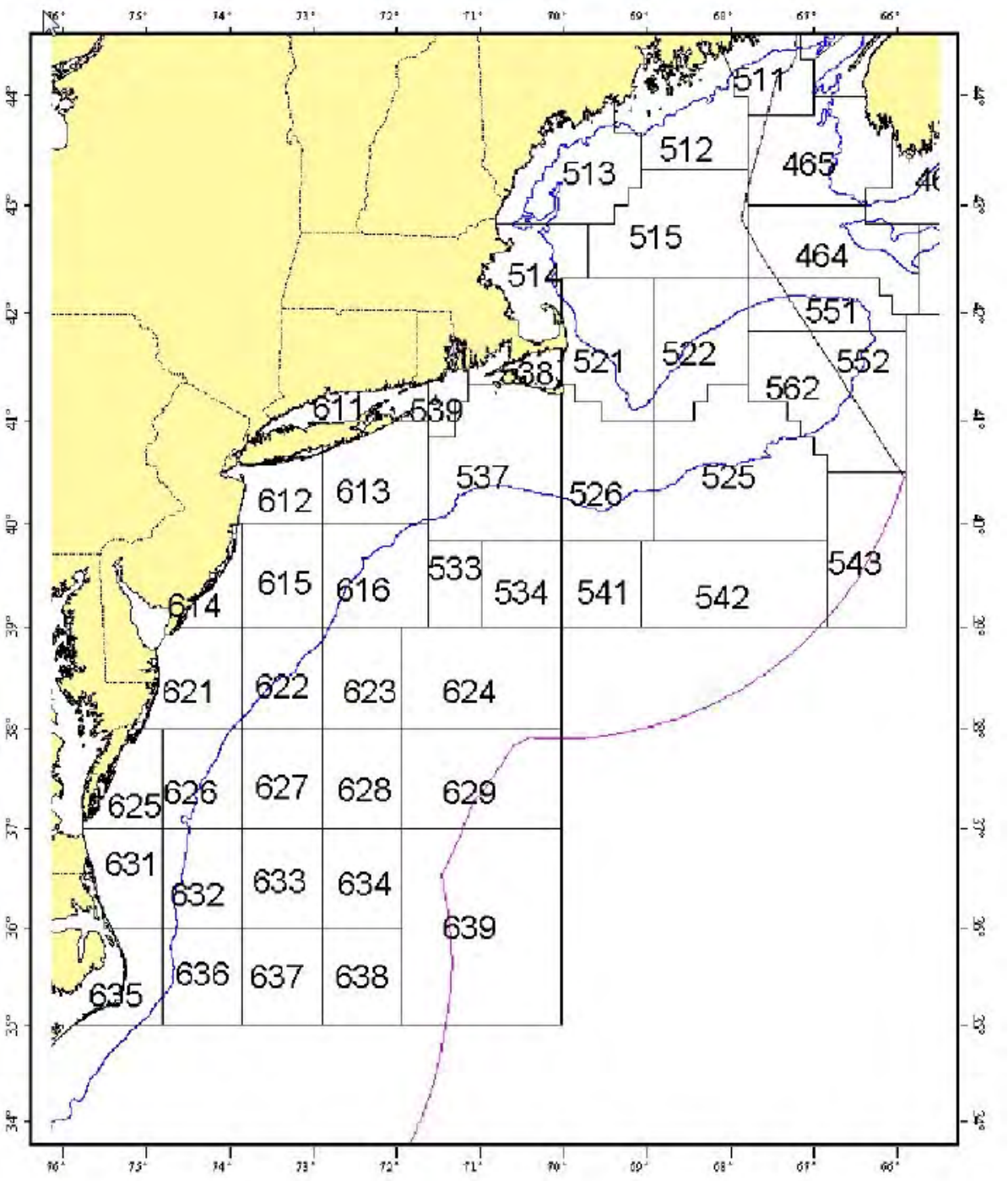

Figure 4: National Marine Fisheries Service Statistical Areas.

Based on VTR data for 2012, the bulk of the summer flounder landings were taken by bottom otter trawls (over 97 percent), with other gear types (e.g. hand lines, scallop dredges, sink gill nets) each accounting for less than 1 percent of landings. Current regulations require a 14 inch total length minimum fish size in the commercial fishery and a 5.5 inch diamond or 6 inch square

minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder, i.e., 200 lb in the winter and 100 lb in the summer.

Summer flounder ex-vessel revenues based on dealer data have ranged from $14.3 to $30.4 million for the 1994 through 2012 period. The mean price for summer flounder (unadjusted) has ranged from a low of $1.34/lb in 2002 to a high of $2.39/lb in 2008 (Figure 5). In 2012, 13.3 million pounds of summer flounder were landed generating $30.4 million in revenues ($2.28/lb).

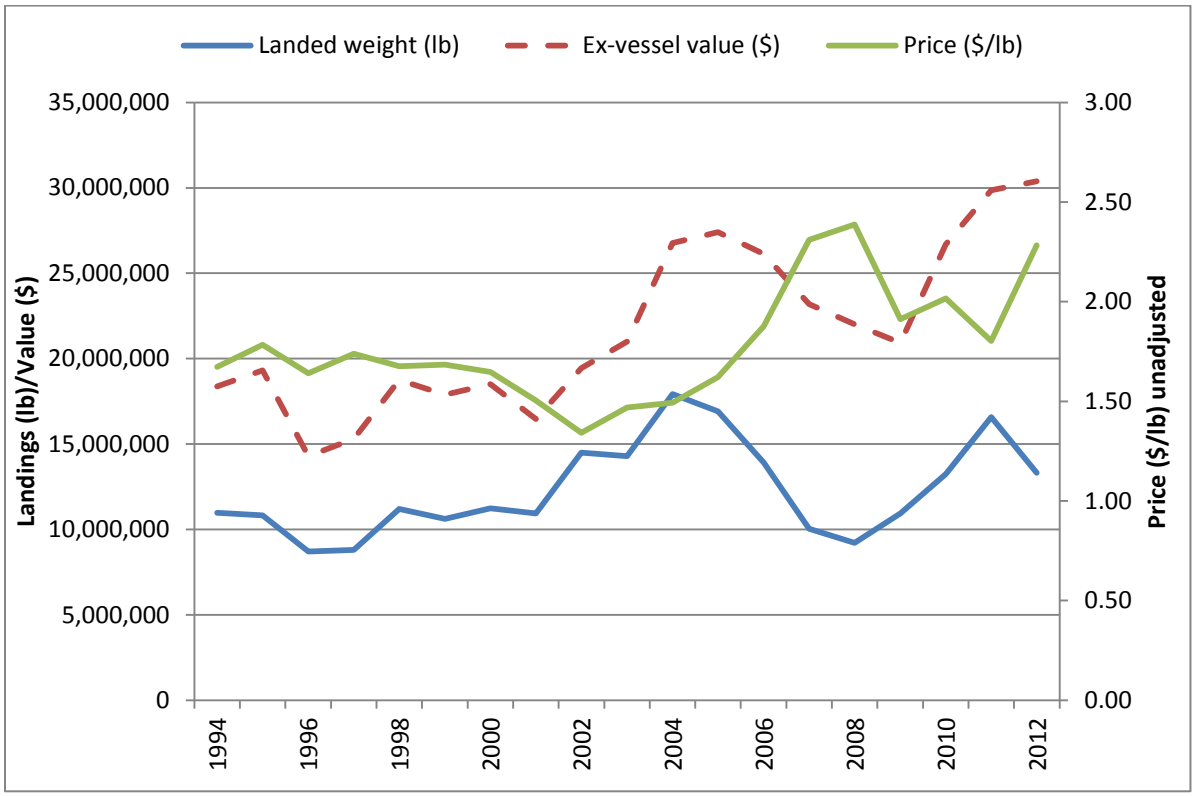

Figure 5: Landings, ex-vessel value, and price (unadjusted) for summer flounder, Maine through North Carolina, 1994-2012.

The ports and communities that are dependent on summer flounder are fully described in Amendment 13 to the FMP. Additional information can be found in the document titled "Community Profiles for the Northeast US Fisheries":

http://www.nefsc.noaa.gov/read/socialsci/pdf/communityProfiles/introduction.pdf.

To examine recent landings patterns among ports, 2012 NMFS dealer data are used. The top commercial landings ports for summer flounder by pounds landed are shown in Table 4. A "top port" is defined as any port that landed at least 100,000 lb of summer flounder. Related data for the recreational fisheries are shown in subsequent sections. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels.

Table 4: Top ports of landing (in lb) for summer flounder (FLK), based on NMFS 2012 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	Landings of FLK (lb)	# FLK Vessels
PT. JUDITH, RI	2,096,432	116
NEWPORT NEWS, VA	2,070,498	43
HAMPTON, VA	1,558,804	40
PT. PLEASANT, NJ	1,083,671	45
CHINCOTEAGUE, VA	900,431	38
CAPE MAY, NJ	579,144	53
MONTAUK, NY	573,699	75
BELFORD, NJ	480,688	22
STONINGTON, CT	445,142	20
NEW BEDFORD, MA	429,116	80
BEAUFORT, NC	362,190	11
WANCHESE, NC	283,975	16
ENGELHARD, NC	204,792	9
HAMPTON BAY, NY	160,051	32
MATTITUCK, NY	150,942	4
OCEAN CITY, MD	139,841	25
WOODS HOLE, MA	138,629	27
HOBUCKEN, NC	116,417	48
NANTUCKET, MA	107,560	12

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (53) who bought summer flounder in 2012 (Table 5). All dealers bought approximately $30.4 million worth of summer flounder in 2012.

Table 5: Dealers reporting buying summer flounder, by state in 2012. Note: C = Confidential.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC
	36	40	10	53	31	C	4	17	21

Recreational Fishery

There is a significant recreational fishery for summer flounder in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. To manage this fishery, state-specific conservation equivalency was developed and has been used every year since 2001 (Table 1). Under conservation equivalency, state-specific measures are developed through the ASMFC, and are submitted to NMFS. If NMFS considers the combination of the state-specific measures to be "equivalent" to the coastwide measures, they may then waive the coastwide regulation in Federal waters. Those fishermen fishing in Federal waters are then subject to the measures of the state in which they land summer flounder. The 2013 recreational fishing measures are given in Table 6.

Table 6: Summer flounder recreational fishing measures in 2013, by state, under conservation equivalency.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16	5 fish	May 22-September 30
Rhode Island	18	8 fish	May 1-December 31
Connecticut*	17.5	5 fish	May 15-October 31
*At 46 designated shore sites	16		
New York	19	4 fish	May 1-September 29
New Jersey	17.5	5 fish	May 18-September 16
Delaware	17	4 fish	All year
Maryland	16	4 fish	March 28-December 31
Potomac River Fish. Commission	16	4 fish	All year
Virginia	16	4 fish	All year
North Carolina	15	6 fish	All year

Recreational data have been available through the Marine Recreational Information Program (MRIP) since 2004, and prior to 2004 were available through the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational catch and landings for summer flounder peaked in 1983 and were at the lowest levels in 1989 (Table 7).

Table 7: Recreational summer flounder landings data from the NMFS recreational statistics databases, 1981-2012.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	13,579	9,567	10,081
1982	23,562	15,473	18,233
1983	32,062	20,996	27,969
1984	29,785	17,475	18,765
1985	13,526	11,066	12,490
1986	25,292	11,621	17,861
1987	21,023	7,865	12,167
1988	17,171	9,960	14,624
1989	2,677	1,717	3,158
1990	9,101	3,794	5,134
1991	16,075	6,068	7,960
1992	11,910	5,002	7,148
1993	22,904	6,494	8,831
1994	17,725	6,703	9,328
1995	16,308	3,326	5,421
1996	18,994	6,997	9,820
1997	20,027	7,167	11,866
1998	22,086	6,979	12,477
1999	21,378	4,107	8,366
2000	25,384	7,801	16,468
2001	28,187	5,294	11,637
2002	16,674	3,262	8,008
2003	20,532	4,559	11,638
2004	20,336	4,316	10,966
2005	25,806	4,027	10,867
2006	21,400	3,950	10,589
2007	20,732	3,108	9,256
2008	22,897	2,350	8,134
2009	24,085	1,806	5,987
2010	23,722	1,501	5,108
2011	21,559	1,840	5,954
2012	16,180	2,199	6,289

When anglers are intercepted through the surveys conducted for the recreational statistics programs, they are asked about where the majority of their fish were caught (i.e., inland, state

waters (<=3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of summer flounder are landed recreationally, and indicate that about 90 percent of the landings (in numbers of fish) occur in state waters (Table 8).

Table 8: Percentage of summer flounder recreational landings (MRIP Type A+B1 in number of fish) by area (state vs. Federal waters), Maine through North Carolina, 2003-2012. Area information is self-reported based on where the majority of fishing activity occurred per angler trip.

Year	State <= 3 mi	EEZ > 3 mi
2003	91.7	8.3
2004	87.7	12.3
2005	81.2	18.8
2006	90.4	9.6
2007	88.9	11.1
2008	96.8	3.2
2009	90.8	9.2
2010	92.3	7.7
2011	95.4	4.6
2012	88.0	12.0
Avg. 2003 - 2012	90.3	9.7
Avg. 2010 - 2012	91.2	8.1

Table 9: State contribution (as a percentage) to total recreational landings of summer flounder, (MRIP Type A+B1 in number of fish), from Maine through North Carolina, 2011 and 2012.

State	2011	2012
Maine	0.0	0.0
New Hampshire	0.0	0.0
Massachusetts	3.2	3.4
Rhode Island	8.8	4.7
Connecticut	2.6	2.8
New York	20.4	22.3
New Jersey	40.0	49.3
Delaware	3.6	1.9
Maryland	0.8	1.0
Virginia	17.3	11.8
North Carolina	3.3	2.9
Total	**100%**	**100%**

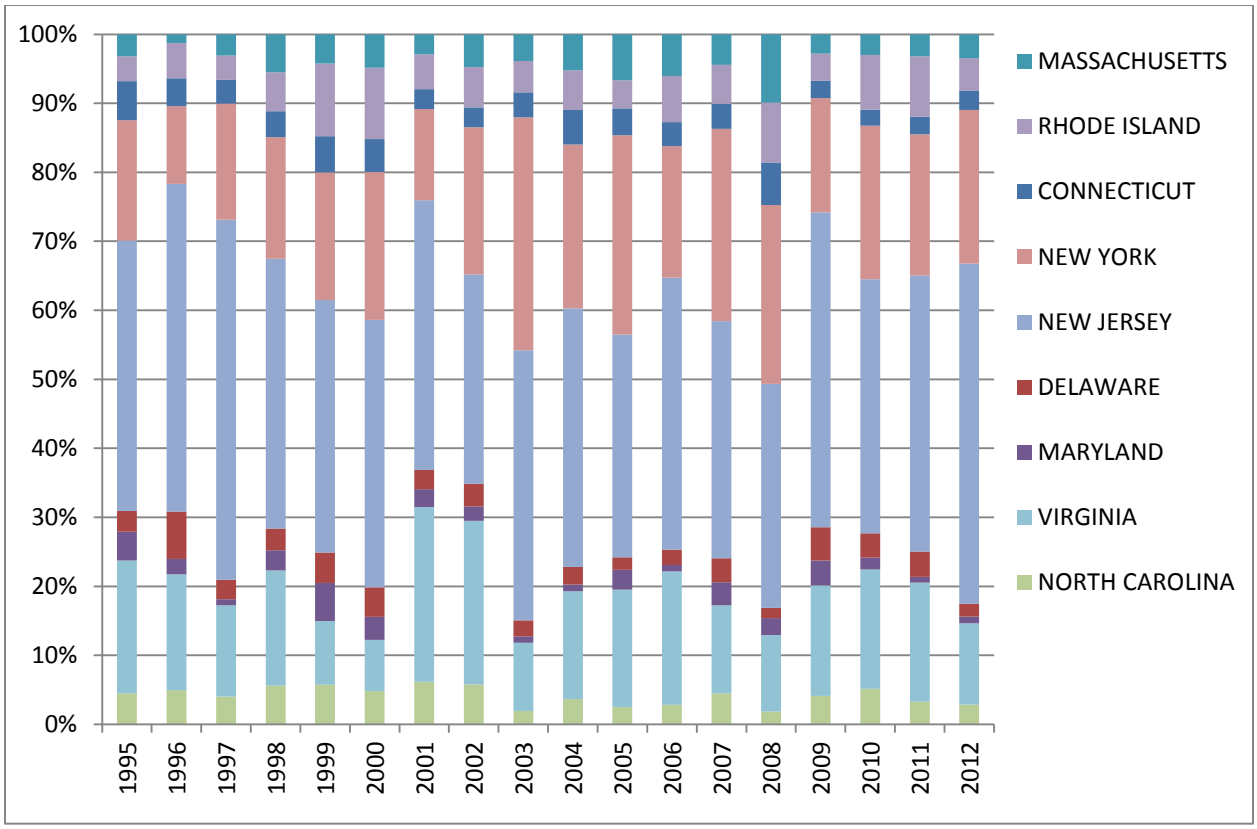

Figure 6: State contribution (as a percentage) of total recreational landings of summer flounder (MRIP Type A + B1 in number of fish), from Massachusetts through North Carolina, 1995-2012.

The states of New Jersey and New York land the majority of fish, followed by Virginia (Table 9; Figure 6). Since the mid-1990s, the state contributions of landings (in numbers of fish) have fluctuated from year to year but remained relatively consistent (Figure 6).

In 2012, there were 826 recreational vessels (i.e., party and charter vessels) that held summer flounder Federal recreational permits. Many of these vessels also hold recreational permits for scup and black sea bass. Landings by mode indicate that private/rental fishermen are responsible for the majority of summer flounder landings (Table 10).

Table 10: The number of summer flounder landed from Maine through North Carolina by mode, 1981-2012.

Year	Shore	Party/Charter	Private/Rental
1981	3,145,683	1,362,252	5,058,639
1982	1,120,521	5,936,006	8,416,173
1983	3,963,680	3,574,229	13,458,398
1984	1,355,595	2,495,733	13,623,843
1985	786,185	1,152,247	9,127,759
1986	1,237,033	1,608,907	8,774,921
1987	406,095	1,150,095	6,308,572
1988	945,864	1,134,353	7,879,442
1989	180,268	141,320	1,395,177
1990	261,898	413,240	3,118,447
1991	565,404	597,610	4,904,637
1992	275,474	375,245	4,351,387
1993	342,225	1,013,464	5,138,352
1994	447,184	836,362	5,419,145
1995	241,906	267,348	2,816,460
1996	206,927	659,876	6,130,182
1997	255,066	930,633	5,981,121
1998	316,314	360,777	6,302,004
1999	213,447	300,807	3,592,741
2000	569,612	648,755	6,582,707
2001	226,996	329,705	4,736,910
2002	154,958	261,554	2,845,647
2003	203,717	389,142	3,965,811
2004	200,368	463,776	3,652,354
2005	104,295	498,614	3,424,557
2006	154,414	315,935	3,479,934
2007	98,418	499,160	2,510,000
2008	79,339	171,951	2,098,583
2009	62,691	176,997	1,566,490
2010	59,812	160,109	1,281,546
2011	34,849	137,787	1,667,240
2012	106,342	96,386	1,996,407
% of Total, 1981-2012	9%	14%	77%
% of Total, 2008-2012	3%	8%	89%

The NMFS angler expenditure survey summarizes a variety of costs associated with recreational fishing in the Northeast (Table 11). In addition, Steinback et al., 2009 summarized the reasons for fishing, with a majority of anglers (about 85 percent) fishing either mostly or fully for recreational purposes (Table 12).

Table 11: Average daily trip expenditures ($ unadjusted) by recreational fishermen in the Northeast region by mode, in 2006. Source: Gentner and Steinback (2008)

Expenditures	$		
	Party/Charter	Private/Rental	Shore
Private transportation	13.88	11.03	12.94
Public transportation	0.26	0.07	0.40
Auto rental	0.27	0.02	0.10
Food from grocery stores	7.40	4.92	7.33
Food from restaurants	8.70	3.42	9.28
Lodging	10.0	2.64	14.90
Boat fuel	0	9.54	0
Boat or equipment rental	0.05	0.19	0.03
Charter fees	57.76	0	0
Charter crew tips	3.0	0	0
Catch processing	0.02	0	0
Access and parking	0.44	1.11	1.32
Bait	0.31	3.42	3.25
Ice	0.39	0.59	0.39
Tackle used on trip	1.87	2.04	3.98
Tournament fees	1.10	0.04	0.02
Gifts and souvenirs	1.67	0.10	1.45
Total	107.13	39.14	55.39

Table 12: Purpose of Marine Recreational Fishing in the Northeast. Source: Steinback et al., 2009.

	Percent	Number of anglers in 2005 (thousands)
All for food or income	2.1	92.4
Mostly for food or income	<1.0	34.3
Both for recreation and for food or income	11.7	514.8
Mostly for recreation	13.2	580.8
All for recreation	72.2	3,176.8

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MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 24, 2013

TO: Council

FROM: Kiley Dancy, Staff

SUBJECT: Scup Management Measures for 2014 and 2015

The following materials are enclosed for Council consideration of the above subject:

1) Summary of Monitoring Committee Recommendations (*See Summer Flounder Briefing Book Tab*)
2) September 2013 Scientific and Statistical Committee Meeting Report (*See Summer Flounder Briefing Book Tab*)
3) Staff Recommendation Memo
4) Comment letter from Hank Lackner
5) Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports (*See Summer Flounder Briefing Book Tab*)
6) Scup Advisory Panel Information Document

Links to the following additional reference materials can be found on the October 2013 briefing book page on the Council's website, at http://www.mafmc.org/briefing/october-2013:

1) 2013 Scup Data Update and "Rumble Strips" Analysis

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 5, 2013

TO: Chris Moore, Executive Director

FROM: Kiley Dancy, Staff

SUBJECT: Scup Management Measures for 2014 and 2015

Executive Summary

Based on the latest stock assessment update in July of 2012, the scup stock is not overfished and overfishing is not occurring. The assessment model estimated spawning stock biomass (SSB) was 419.81 million lb (190,424 mt) in 2011 (207% of the biomass at maximum sustainable yield, SSB_{MSY}). Multi-year specifications are currently in place for scup for 2014 and 2015 (Table 1). Staff recommend no changes to these specifications.

Table 1: Current catch limits for scup in 2014 and 2015.

2014	**ABC**	35.99 mil lb (16,325 mt)
	Commercial ACL = ACT	28.07 mil lb (12,732 mt)
	Recreational ACL = ACT	7.92 mil lb (3,592 mt)
2015	**ABC**	33.76 mil lb (15,320 mt)
	Commercial ACL = ACT	26.34 mil lb (11,950 mt)
	Recreational ACL = ACT	7.43 mil lb (3,370 mt)

Last year, the Council also voted to allow up to 3% of the total allowable landings (TAL) be made available to the Research Set-Aside (RSA) Program in 2014 and 2015. After adjusting for 3% RSA, the resulting commercial quotas are 21.95 million lb (9,955 mt) in 2014 and 20.60 million lb (9,342 mt) in 2015. The resulting recreational harvest limits after adjusting for 3% RSA are 7.03 million lb (3,188 mt) for 2014, and 6.60 million lb (2,992 mt) for 2015. Staff do not recommend any change to the current minimum fish size (9 inch-TL), gear requirements, or possession limits.

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's Scientific and Statistical Committee (SSC) to provide ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch (ABC), prevention of overfishing, and achieving maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In addition, the Monitoring Committees established by the Fishery Management Plan (FMP), are responsible for developing recommendations for management measures designed to achieve the recommended catch limits.

The SSC and Monitoring Committee will review the implemented specifications for scup. Based on the SSC and Monitoring Committee recommendations, if changes to the current scup measures are warranted, the Council will make a recommendation to the National Marine Fisheries Service (NMFS) Northeast Regional Administrator. Because these species are cooperatively managed with the Atlantic States Marine Fisheries Commission, the Commission's Summer Flounder, Scup, and Black Sea Bass Board will meet jointly with the Council to recommend scup management measures. In this memorandum, information is presented to assist the SSC and Monitoring Committee in developing recommendations for the Council and Board to consider for the 2014 and 2015 fishing years for scup.

Additional relevant information about the fishery and past management measures is presented in the Fishery Performance Report for scup developed by the Council and Commission Advisory Panels, as well as in the corresponding Scup Information Document prepared by Council staff.

Catch and Landings

Based on dealer data and Marine Recreational Information Program data, 2012 commercial and recreational landings were 15.70 million lb (7,121 mt) and 4.17 million lb (1,891 mt), respectively. Commercial landings as of the week ending April 27, 2013 indicated that 67% of the Winter I (January-April) quota had been landed. As of the week ending August 17, 2013, the coastwide landings report indicated that 57% of the summer period quota has been landed (Table 2).

Table 2: The 2013 scup summer period quota and the amount of scup landed by commercial fishermen in the summer period, in each state as of week ending August 17, 2013.

	Commercial Summer Period			Research
State	**Cumulative Landings (lb)[a]**	**2013 Summer Quota (lb)[b]**	**Percent of Quota (%)**	**Set-Aside Landings (lb)[a]**
ME	0			0
NH	106			0
MA	866,202			0
RI	2,667,925			29,990
CT	212,212			2,507
NY	1,394,190			160,904
NJ	53,406			0
DE	1			0
MD	4,107			0
VA	13,773			0
NC	13			0
Other	0			0
Totals	**5,211,845**	**9,163,877**	**57**	**193,401**

[a] Quotas adjusted for research set-aside and overages. Source: NMFS Weekly Quota Report for week ending August 17, 2013.

Regulatory Review

In July 2012, the SSC met to specify an ABC for scup for fishing year 2013, and to consider specifying multi-year ABCs for up to three years. The SSC recommended three-year ABCs for scup, for 2013, 2014, and 2015 based on a constant fishing mortality rate.

The overfishing limit (OFL) for 2013 was 47.80 million lb (21,680 mt), defined by the fishing mortality threshold of F=0.177 and projected biomass in 2013 (432.63 million lb, 196,236 mt; 212% of SSB_{MSY}). Based on the 2012 projected SSB/SSB_{MSY} = 212%, Council risk policy P* = 0.4, and a lognormal distribution with of CV = 100%, the SSC set an ABC of 38.71 million lb (17,557 mt) for 2013. This ABC is about 81% of the OFL. A constant fishing mortality rate approach was applied to derive the ABCs for 2014 and 2015.

The SSC considered scup to be a level 3 assessment, and considered the following to be the most significant sources of uncertainty: lack of representation of older age scup (age 3+) in the survey data that were used as input to the model, despite representation in the catch used in the assessment model; uncertainty exists with respect to the estimate of natural mortality (M) used in the assessment; uncertainty in the stock status due to uncertainties in the estimates of both the stock's biomass and the

biological reference point proxy used for F_{MSY}; the lack of characterization of uncertainty for the OFL and other biological reference points in the assessment; uncertainty with regard to the appearance of high recruitment in recent years relative to historical levels of recruitment; sensitivity of survey indices to scup availability, resulting in high inter-annual variability; concern about the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment, and the assumption on which the projections are based that the quota would be landed in 2012, 2013, and 2014.

Management measures in the commercial fishery other than quotas and harvest limits (i.e., minimum fish size, GRAs, etc.) have remained generally constant in recent years with the exception of the increase in the Winter I possession limit increase from 30,000 lb in 2011 to 50,000 lb in 2012.

Stock Status and Biological Reference Points

The most recent benchmark assessment on scup was peer-reviewed and accepted in December 2008 by the DPSWG Peer Review Panel. Documentation associated with this assessment and previous stock assessments, such as reports on stock status, including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) panelist reports, are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw/.

The biological reference points for scup include a fishing mortality threshold of $F_{MSY} = F_{40\%}$ (as F_{MSY} proxy) = 0.177 and $SSB_{MSY} = SSB_{40\%}$ (as SSB_{MSY} proxy) = 202.92 million lb (92,044 mt; 2008 Data Poor Stock Working Group Peer Review Panel). The minimum stock size threshold, one-half SSB_{MSY}, is estimated to be 101.46 million lb (46,022 mt).

The July 2012 assessment update indicates that the scup stock is not overfished and overfishing is not occurring relative to the biological reference points. Fishing mortality in 2011 was estimated to be 0.034, below the fishing mortality threshold reference point ($F_{MSY} = 0.177$). SSB in 2011 was about 420 million lb (190,424 mt).

Basis for 2014 and 2015 ABC Recommendation

Input from the Council's Visioning and Strategic Planning processes as well as from the Advisory Panel Fishery Performance Reports highlight stakeholder interest in increasing the stability of fishery management measures. This was a significant motivation in moving toward multi-year specifications, which are already in place in 2014 and 2015 for scup.

An interim evaluation method was developed to assess whether or not a revision of currently set catch and landings limits may be warranted for species under multi-year specifications. This method, known as the "rumble strips" approach, was developed by the Scientific Uncertainty Subcommittee of the SSC, and is outlined in the document titled "Rumble Strips for Assessing the Performance of Multi-year Acceptable Biological Catch Limits."[1] Multiple indicators of stock status are evaluated relative to a

[1] Available at http://www.mafmc.org/ssc-meetings/september-2013.

baseline period of stable stock condition, in order to assess whether they are within a range that was expected when the multi-year ABCs were originally set. Based on the rumble strips analysis for scup, almost all of the indicators are at levels near the average for the baseline period, with only the fall survey index of kg/tow outside the confidence interval (Figure 1).

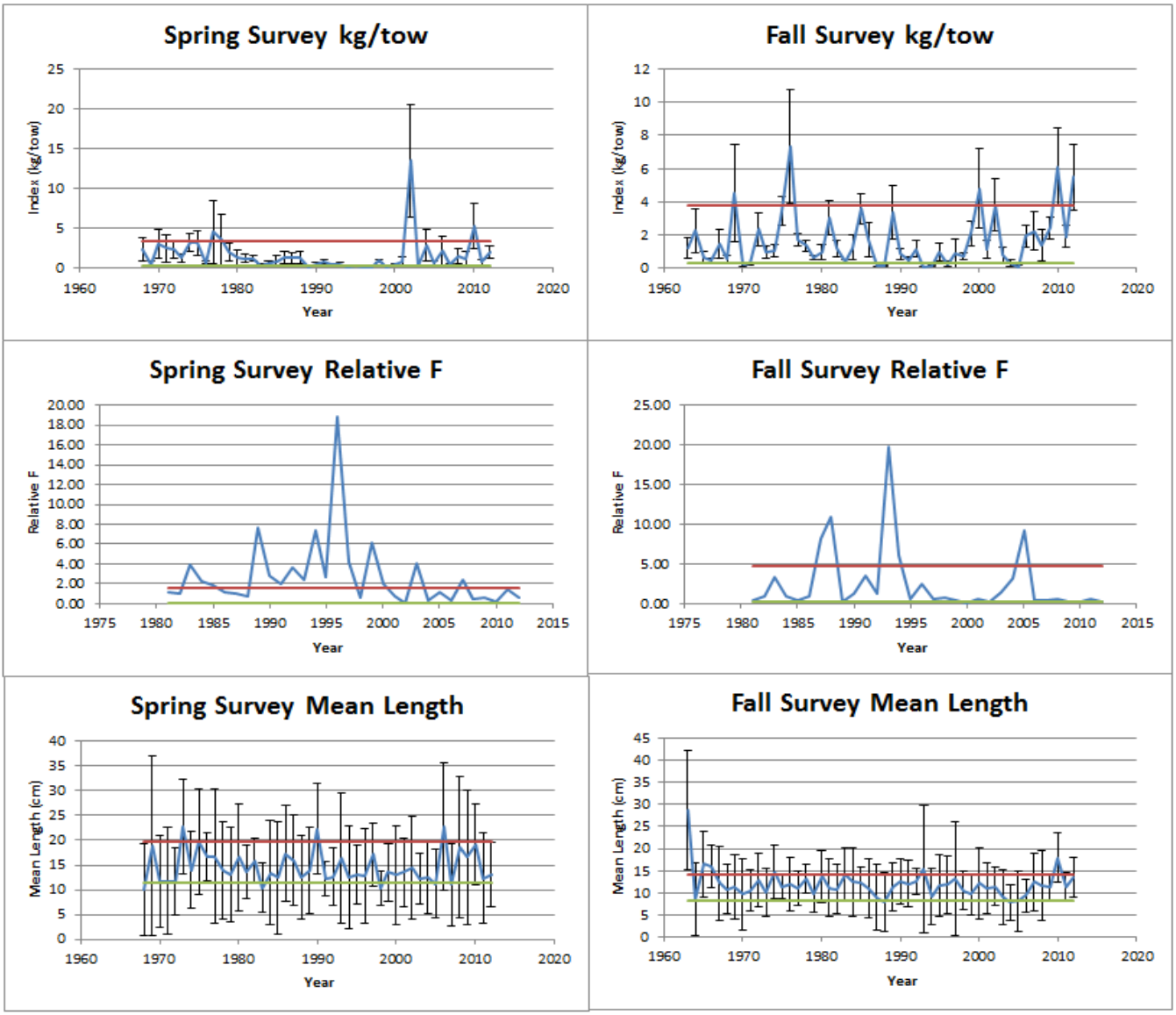

Figure 1: Results of interim "rumble strips" analysis to evaluate performance of multi-year specifications for scup.

Given the lack of a full assessment update, and an interim evaluation that does not appear to reveal any significant cause for concern with the scup stock, staff recommend that scup specifications remain unchanged from those currently set for 2014 and 2015.

Other Management Measures

Recreational and Commercial ACLs

The acceptable biological catch (ABC) ABC is equivalent to the total allowable catch (TAC) and the sum of the commercial and recreational ACL equals the ABC (Figure 2).

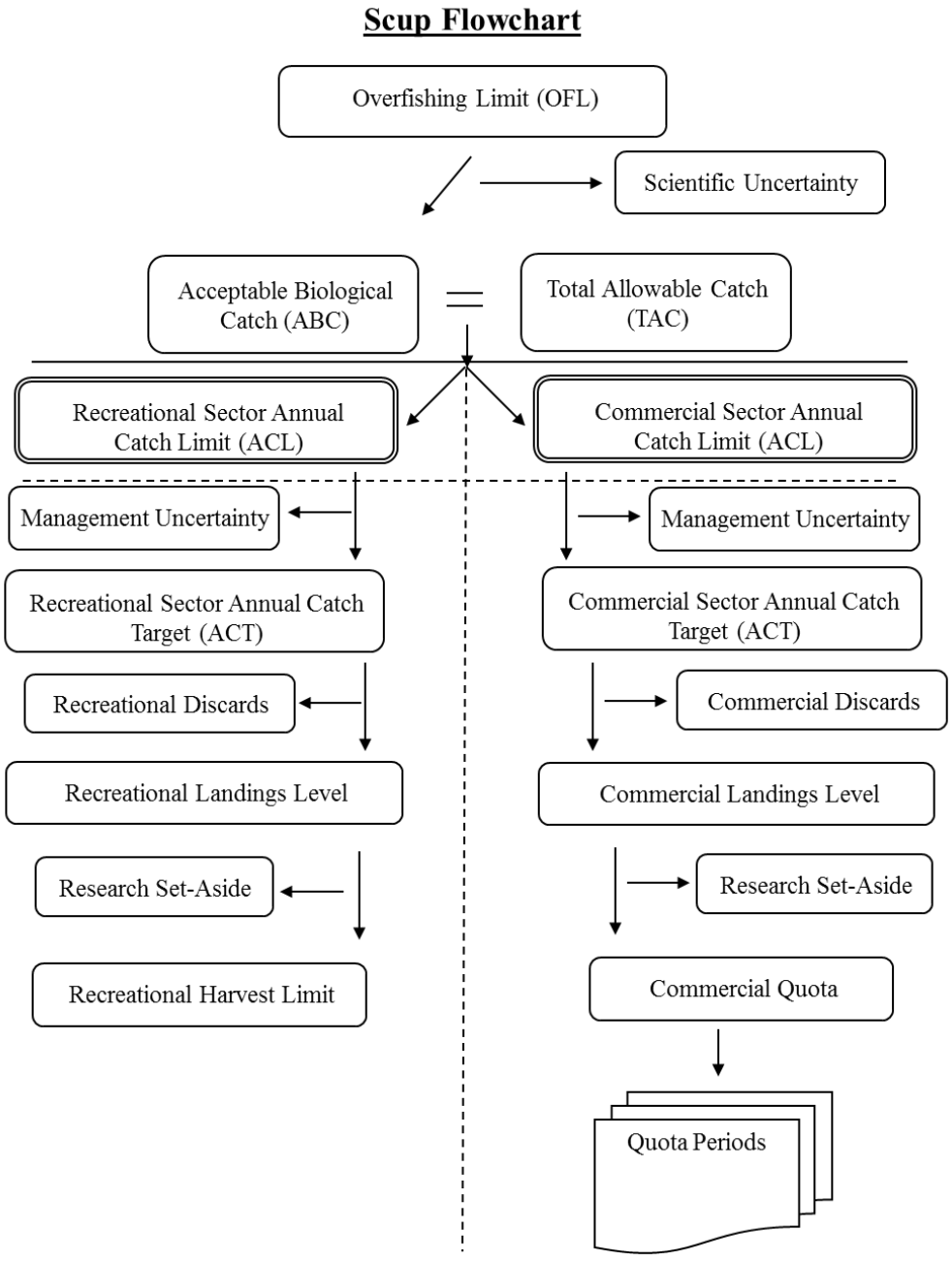

Figure 2: Flowchart for scup catch and landings limits.

The ABCs in place are comprised of both landings and discards. Based on the allocation percentages in the FMP, 78% of the catch is allocated to the commercial fishery, and 22% to the recreational. Discards were apportioned based on the contribution from each fishing sector using the 2009-2011 average ratios; 89% of the dead discards are attributable to the commercial fishery, 11% to the recreational.

Considerations for ACTs

The Scup Monitoring Committee is responsible for recommending ACTs for the Council to consider. The relationship between the recreational and commercial ACTs and other catch components are given in Figure 2. The Monitoring Committee may provide other recommendations relevant to setting catch limits consistent with the MSA. The Monitoring Committee should consider all relevant sources of management uncertainty in the scup fishery and provide the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. The ACTs, technical basis for ACT recommendations, and sources of management uncertainty would be described and provided to the Council.

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g. due to late reporting, underreporting, and/or misreporting of landings or bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

The recent year sector-specific landings performance indicates that although the recreational fishery had previously been exceeding the recreational harvest limits, in the two years following significant quota increases, the recreational fishery has been well under the harvest limits. The commercial fishery similarly has been well under the commercial quotas in recent years (Table 3). Staff recommend no reduction in catch from the recreational or commercial ACL, such that each sector's ACT would be set equal to the sector ACL.

Table 3: Scup commercial and recreational fishery performance relative to quotas and harvest limits, 2008-2012.

Year	Commercial Landings (mil lb)	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb)	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2008	5.18	5.24	-1%	3.76	1.83	+105%
2009	8.19	8.37	-2%	3.23	2.59	+14%
2010	10.70	10.68	0%	5.99	3.01	+91%
2011	15.03	20.36	-26%	3.60	5.74	-36%
2012	15.70	27.91	-44%	4.17	8.45	-51%
5-yr Avg.	-	-	-15%	-	-	+25%

Commercial Quotas and Recreational Harvest Limit

The catch-based allocations (i.e., 78% commercial, 22% recreational) were maintained in the calculation of the sector-specific ACLs and ACTs such that the sum of the sector-specific TALs (commercial and recreational landings levels) are equal to overall TAL (Table 1). Current specifications include a commercial quota of 21.95 million lb (9,955 mt) in 2014 and 20.60 million lb (9,342 mt) in 2015. The adjusted recreational harvest limits are 7.03 million lb (3,188 mt) for 2014, and 6.60 million lb (2,992 mt) for 2015.

The commercial quota is divided into three periods. These are Winter I (January-April; 45.11%), Summer (May-October; 38.95%), and Winter II (November-December; 15.94%). Therefore, the current period quotas for 2014 are 9.90 million lb (4,491 mt) for Winter 1, 8.55 million lb (3,877 mt) for Summer, and 3.50 million lb (1,587 mt) for Winter II. For 2015, period quotas would be 9.29 million lb (4,214 mt) for Winter 1, 8.02 million lb (3,638 mt) for Summer, and 3.28 million lb (1,465 mt) for Winter II.

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 2014 and 2015 will not be determined until after the first four waves of the previous year's recreational landings are reviewed. These data will be available in October of 2013 (for fishing year 2013) and October 2014 (for fishing year 2014). The Monitoring Committee will meet in November of each year to review these landings data and make recommendations regarding changes in the recreational management measures (i.e., possession limit, minimum size, and season). Given the performance of the recreational fishery relative to the recreational harvest limit in recent years, management measures (i.e., minimum size, possession limits, and seasons) should be implemented that are designed to prevent the recreational ACL from being exceeded.

Possession Limits

The Winter I possession limit for 2013 is 50,000 lb, until 80 percent of the landings are reached, at which point the possession limit drops to 1,000 lb. This possession limit was first put in place in 2012, and represented an increase from the 2011 Winter I possession limit of 30,000 lb. A possession limit of 2,000 lb is used in Winter II, unless a transfer of quota occurs between Winter I and Winter II. In that case, the Winter II possession limit increases at 1,500 lb intervals for every 500,000 lb of scup transferred, i.e., if 1.0 million lb is transferred then the limit would be increased by 3,000 lb to result in a 5,000 lb possession limit. The possession limits were chosen as an appropriate balance between the economic concerns of the industry (i.e., landing enough scup to make the trip economically viable) and the need to ensure the equitable distribution of the quota over the period. Table 3 in the Advisory Panel Information Document summarizes the results of a threshold analysis giving the total number of vessels, trips, and landings for a given threshold (pounds of scup) in both winter periods of 2011 and 2012, as well as Winter I for 2013. These data indicate that the overall number of trips taken in Winter I of 2012 increased relative to 2011, and then decreased in 2013 relative to 2012. From 2012 to 2013, there was overall increase in the percentage of trips landings more than 5,000 lb of scup, but trips landing scup in excess of 30,000 lb continued to comprise less than 0.3% of Winter I trips in 2013. Based on this analysis, staff recommend no changes in possession limits in Federal waters.

Table 4 in the Scup AP Information Document gives commercial scup landings, ex-vessel value, and average price per pound, by period, for 2006 to 2012. A price-volume relationship for scup was described in Amendment 14 to the FMP. The increase in commercial supply in 2010 in response to less restrictive quotas may have driven the slight decrease in price in 2010. As such, managers should consider the potential impacts of changes in volume on price in the commercial fishery. However, average prices did increase in 2012 relative to 2011, despite similar landings levels.

Gear Regulations and Minimum Fish Size - Commercial Fishery

Amendment 8 to the Summer Flounder, Scup, and Black Sea Bass FMP contains provisions that allow for changes in the minimum fish size and minimum net mesh. Current commercial regulations for scup require a 9 inch-TL minimum fish size in the commercial fishery and the following gear requirements for otter trawls: minimum mesh size of 5 inch for the first 75 meshes from the terminus of the net and for codends constructed with fewer than 75 meshes, a minimum mesh size of 5 inch throughout the net. The threshold level used to trigger the minimum mesh requirements is 500 lbs of scup from November 1 through April 30 and 200 lb or more of scup from May 1 through October 31. In 2005, the Scup Monitoring Committee reviewed information on discards and did not recommend changes to the regulations. Recent discard estimates have remained substantially lower than the large discard event in 2002 which occurred prior to the implementation of the current regulations. Therefore, staff do not recommend a change in the gear requirements for otter trawls.

Last year, industry members proposed a reduction in the minimum fish size to 8 inch-TL. Staff remain concerned that a drop in the minimum fish size would reduce yields and spawning potential if fishermen target smaller fish. In 2005, staff provided a supplemental memo that reviewed the available information on scup maturity, mesh selectivity, and discards. This information was reviewed and at the time, the monitoring committee did not recommend any changes based on this information. In 2012, the Monitoring Committee commented that a reduction to 8 inches would be unlikely to have a considerable impact on the assessment and spawning capacity, however, concerns remained at the Monitoring Committee and Council levels regarding the lack of discard data for the pot/trap and hook and line fisheries, potential for reduced spawning capacity, and possible increased targeting of smaller scup. As such, staff recommend no changes to the minimum fish size and net mesh requirements.

Gear Restricted Areas (GRAs)

Gear restricted areas (GRA) were implemented by NMFS in 2000 to reduce discards of scup in small mesh fisheries. The scup GRAs were originally implemented and previously modified through the specifications process. In 2000, they were modified in size to include areas farther south that were identified as areas of potential scup and *Loligo* interactions, and in 2005, the boundary of the southern GRA was moved 3 longitudinal minutes to the west based on recommendations from the Monitoring Committee. No modifications were made to the GRAs in 2006 through 2013.

As described in Amendment 14 to the Summer Flounder, Scup, and Black Sea Bass FMP, modifications to scup GRAs must be done through a Framework Adjustment.

Pots and Traps Escape Vents

Current regulations require a circular escape vent of 3.10 inch, a square escape vent of 2.25 inch, or a rectangular escape vent of an equivalent size. A Council and Commission sponsored workshop in 2005 reviewed several vent size studies and did not make any recommendations for changes as they relate to scup. Therefore, staff recommend no changes to escape vent size requirements in scup pots.

Dancy, Kiley

From: JDHLCL@aol.com
Sent: Friday, September 06, 2013 12:41 PM
To: Dancy, Kiley
Cc: Moore, Christopher; Robins, Rick; star2017@aol.com; Nolan, Laurie; Kaelin, Jeff; gregdidomenico@gmail.com
Subject: Fwd: commercial scup regulations

Hello Kiley,
I have sent you an email that I spread around in the beginning of the year.Since you now have the lead on scup please consider these thoughts for indepth conversation at the next council meeting.
On another note,I also spoke with Chris about the removal or modifying the scup Gra's.Please include this is any scup discussions. There is room for a lot of regulatory change in the directed scup fishery.It is all for the good of the resource...One last thing to also consider is the raising of pounds allowed while using small mesh.Since we dont catch the quota incidental catches should be turned into landings and not discarded..
If you would like to discuss any of these thoughts I will be available the next few days.Monday will be a little difficult,as I have to be in RI to discuss yellowtail flounder bycatch in the small mesh fisheries that take place on Georges Banks.
Thanks Hank Lackner

From: gregdi@voicenet.com
To: JDHLCL@aol.com, cmoore@mafmc.org
CC: jcoakley@mafmc.org, tilefish1@optonline.net, tony@rocketcharters.com, johnmcmurray@optonline.net, richardbrobins@gmail.co, hjgbking@verizon.net, star2017@aol.com
Sent: 2/11/2013 9:58:34 A.M. Eastern Daylight Time
Subj: RE: commercial scup regulations

Hank….

GSSA is in support of your request.

I will be at the meeting this week to respond to any questions regarding this issue.

Greg DiDomenico

Garden State Seafood Association

From: JDHLCL@aol.com [mailto:JDHLCL@aol.com]
Sent: Tuesday, February 05, 2013 2:02 PM
To: cmoore@mafmc.org
Cc: jcoakley@mafmc.org; tilefish1@optonline.net; tony@rocketcharters.com; johnmcmurray@optonline.net; richardbrobins@gmail.co; hjgbking@verizon.net; gregdi@voicenet.com; star2017@aol.com
Subject: commercial scup regulations

Hello all,

I am sending this email in regards to the winter 2 scup trip limit.In this email,I will propose a potential solution to the underharvesting of allocation(appx 9,000,000lbs or 80% of quota) ,a way to

SIGNIFICANTLY REDUCE regulatory discards and lastly a way to make the resource more accessible to the fleet when they are in federal waters.

As we all know,the rebuilt status of scup, is a great accomplishment for not only the mid atlantic council but the fisherman who endured years of low quotas and poor prices.Up until now,we have always managed in an overprecautionary manner. I believe now is the time to make the immediate changes(Framework ?) necessary for the fleet to take advantage of a resource that is fully rebuilt.

The winter 2 trip limit has not changed as yearly quotas have risen, nor does it adjust as uncaught quota is transferred from prior periods..In fact,I believe the way the resource is currently managed it is impossible,using historical participants and landings data, to even catch the quota.

During the winter 2 period ,the fish are,for the most part close to land and available to most of the fleet .Unfortunately,A very low federal trip limit(8,000 lbs.) and the randomness of catch volume, lead to discards and wasted fuel.

I am proposing to the council as follows:

1.Do away with the 8,000lbs.trip limit and institute a cumulative trip limit.That is, a certain amount per vessel /per week .I was thinking along the lines of 45,000lbs per week.In doing this,if a vessel gets a larger tow(ie. a vessel makes a 10 minute tow and gets 20,000lbs.) they do not throw any marketable fish over,under the old system 12,000lbs would be discarded. They can then go ahead and land these fish or set in and catch the rest of their weekly amount. When they catch their weekly amount, they tie up for the remainder of the week or go do something else.

1a .If needed this can be monitored very easily with VMS.It should also be noted,the fleet operated under a similar system a few winters(winter 1) ago and it was very successful..

2. Another advantage to this approach is fuel savings. A vessel will now be able to catch their weekly amount in less than 7 days ,resulting in less trips!!

3.We should also remember that safety concerns do get addressed here as well. A vessel will not feel obligated to leave the dock every day in order to chase the fish..With this approach,there always is tomorrow.

4. Lastly,I think the council should look at realigning the months that comprise the summer landing period and winter2 landing period.As VTR data can clearly show,a fairly large amount of scup are caught in the EEZ while still being controlled by individual states.My proposal is as follows:

A. Shorten the summer period by 1 month,that is call the summer period the months of ,May,June,July Aug,Sept.

B. Lengthen the winter period to comprise of the months of , Oct,NOV,DEC.

By making these few little adjustments to the current management of scup,the fleet and resource will see considerable benfits.

THANKS for your time and consideration ,

Hank Lackner

Scup Advisory Panel Information Document[1]

August 2013

Management System

The Fishery Management Plan (FMP) for scup has been in place since 1996 when it was incorporated into the Summer Flounder FMP. The FMP established the management unit for scup (*Stenotomus chrysops*) as the U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the U.S.-Canadian border, and established measures to ensure effective management of the scup resource. There are two management entities that work cooperatively to develop fishery regulations for scup: the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fishery Management Council (MAFMC), in conjunction with the National Marine Fisheries Service (NMFS) as the federal implementation and enforcement entity. The cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and federal waters (3-200 miles offshore). The commercial and recreational fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. The scup stock was previously under a stock rebuilding strategy and was declared rebuilt in 2009. The FMP, including subsequent Amendments and Frameworks, is available on the Council website at: http://www.mafmc.org/sf-s-bsb/.

Basic Biology

Information on scup life history and habitat requirements can be found in the document titled, "Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics" (Steimle et al. 1999), and is summarized here. An electronic version is available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

Scup is a schooling continental shelf species of the Northwest Atlantic which undertakes extensive migrations between coastal waters and offshore waters. Spawning occurs from May through August, peaking in June. Scup spawn once annually over weedy or sand-covered areas. Juvenile and adult scup are demersal, using inshore waters in the spring and moving offshore in the winter. Essential Fish Habitat (EFH) for scup includes demersal waters, sands, mud, mussel beds, and seagrass beds, from the Gulf of Maine through Cape Hatteras, North Carolina. About 50% of age-2 scup are sexually mature (at about 17 cm total length, or 7 inches), while nearly all scup of age 3 and older are mature (DPSWG 2009). Scup reach a maximum age of at least 14

[1] Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of August 2013, unless otherwise noted.

years, with a likely maximum of 20 years (DPSWG 2009). Adult scup are benthic feeders and forage on a variety of prey, including small crustaceans (including zooplankton), polychaetes, mollusks, small squid, vegetable detritus, insect larvae, hydroids, sand dollars, and small fish. The Northeast Fisheries Science Center (NEFSC) food habits database lists several shark species, skates, silver hake, bluefish, summer flounder, black sea bass, weakfish, lizardfish, king mackerel, and goosefish as predators of scup.

Status of the Stock

A statistical catch at age model (age-structured assessment program; ASAP) model was used in the most recent peer-reviewed and accepted scup assessment (DPSWG 2009; Data Poor Stock Working Group (DPSWG) Peer Review Panel). Reports on "Stock Status," including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, Stock Assessment Review Committee (SARC) panelist reports, and DPSWG reports and peer-review panelist reports are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw.

Based on the July 2012 assessment update (Terceiro 2012), the scup stock was not overfished and overfishing was not occurring in 2011 relative to the biological reference points. The fishing mortality rate (F) was estimated to be 0.034 in 2011, below the fishing mortality threshold reference point (F_{MSY} = F40% = 0.177) (Figure 1). Spawning Stock Biomass (SSB) was estimated to be 190,424 metric tons (420 million lb) in 2011, above the biomass target reference point (SSB_{MSY} = $SSB_{40\%}$ = 92,044 mt, or 203 million lb). After below average recruitment in 2009 and 2010, the 2011 year class was estimated to be above average at 154 million age 0 fish (Figure 2).

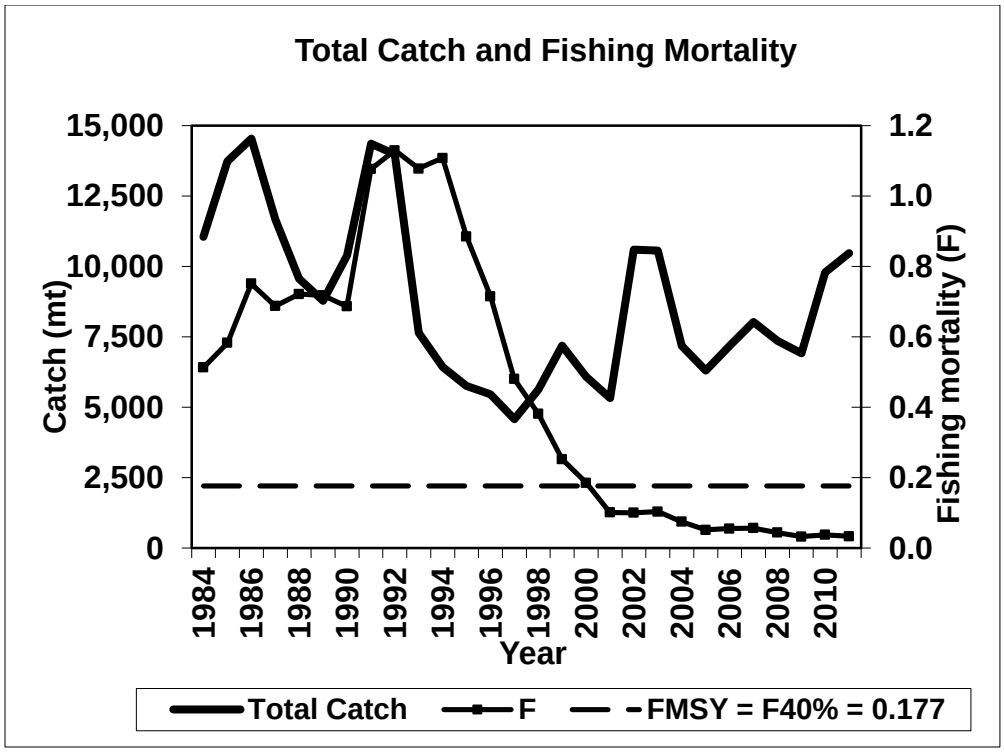

Figure 1: Total fishery catch and fishing mortality rate for scup. $F_{40\%}$ is the proxy for F_{MSY}. Source: Terceiro 2012.

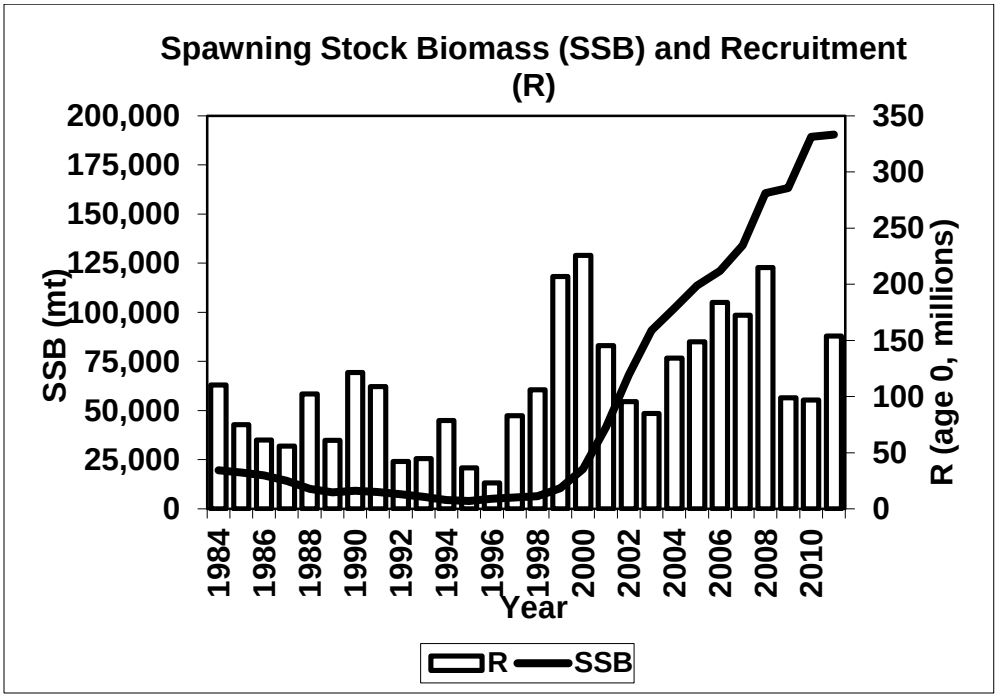

Figure 2: Spawning stock biomass (SSB) and Recruitment (R, age 0) by calendar year. Source: Terceiro 2012.

Fishery Performance

There are significant commercial and recreational fisheries for scup. Scup is managed primarily using output controls (catch and landings limits), with 78 percent of the landings being allocated to the commercial fishery as a commercial quota and 22 percent of landings allocated to the recreational fishery as a recreational harvest limit. The commercial quota is divided into three periods: Winter I (January-April; 45.11 percent), Summer (May-October; 38.95 percent), and Winter II (November-December; 15.94 percent).

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for scup. Permit data indicate that 725 vessels held commercial permits for scup in 2012. Total (commercial and recreational) landings peaked in 1981 at over 27 million lb, and in 2012 were about 19.9 million lb total (Figure 3).

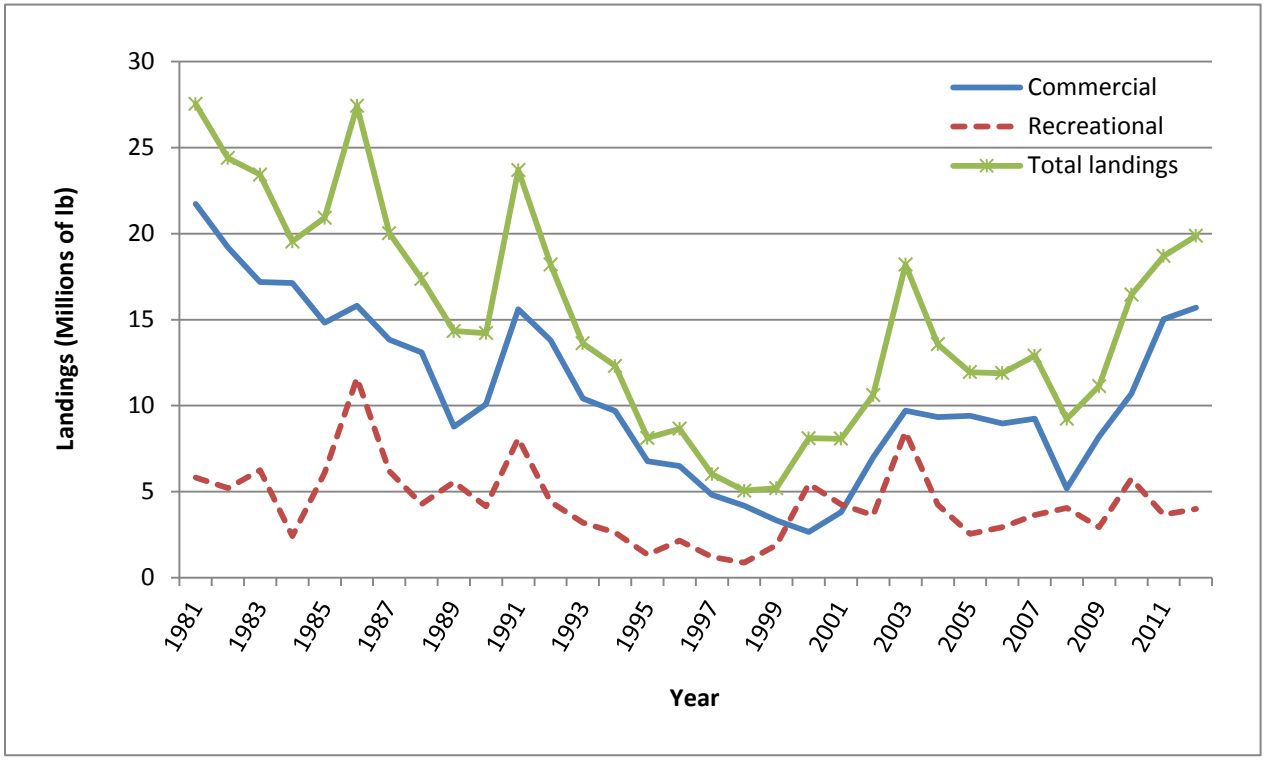

Figure 3: Commercial and Recreational U.S. Scup Landings (millions of pounds) from Maine to North Carolina, 1981-2012.

Table 1 summarizes the scup management measures for the 2004-2015 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2010, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest).

Table 1: Summary of scup management measures and landings for 2004 through 2015.

Management measures	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014[c]**	**2015[c]**
ABC (m lb)	NA	NA	NA	NA	NA	11.70	17.09	51.70	40.88	38.71	35.99	33.78
TAC (m lb)	18.65	18.65	19.79	13.97	9.90	15.54[b]	17.09	31.92	40.88	38.71	35.99	33.78
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	31.89	30.19	28.07	26.34
Com. quota–adjusted (m lb)[a]	12.34	12.23	11.93	8.90	5.24	8.37	10.68	20.36	27.91	23.53	21.95	20.60
Commercial landings	9.33	9.41	8.96	9.25	5.18	8.20	10.71	15.03	15.70	NA	NA	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	8.99	8.52	7.92	7.43
Rec. harvest limit-adjusted (m lb)[a]	4.01	3.96	4.15	2.74	1.83	2.59	3.01	5.74	8.45	7.55	7.03	6.60
Recreational landings	4.24	2.54	2.93	3.65	4.04	2.94	5.74	3.66	4.17	NA	NA	NA
Com. fish size (in)	9	9	9	9	9	9	9	9	9	9	9	9
Com. min. mesh size (in, diamond)	4.5/5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Threshold (lb)	500/100	500/200	500/ 200	500/ 200	500/ 200	500/ 200	500/ 200	500/200	500/200	500/200	500/200	500/200
Recreational measures (minimum fish size (total length), possession limit, and open season)	10-in TL, 50 fish, 1/1-2/28 and 9/7 - 11/30	10-in TL, 50 fish, 1/1-2/28 and 9/18 - 1/30	10-in TL, 50 fish, 1/1-2/28 and 9/18-11/30	10-in TL, 50 fish, 1/1-2/28 and 9/18-11/30	10.5-in TL, 15 fish, 1/1-2/28 and 10/1-10/31	10.5-in TL, 15 fish, 1/1-2/28 and 10/1-10/31	10.5-in TL, 10 fish, 6/6 - 9/26	10.5-in TL, 10 fish, 6/6 - 9/26	10.5-in TL, 15 fish, 5/19-10/14 and 11/1-12/31	10-in TL, 30 fish, 1/1-12/31	NA	NA

[a]Adjusted for RSA and projected discards. [b]In 2009, the SSC recommend an ABC of 11.70 million lb. Based on the Data Poor Stocks Workgroup Panel Report, which was not available to the SSC at the time the recommendation was made, NMFS increased the TAC to 15.54 million lb. NA=Not applicable or not yet available. [c]These reflect the regulations currently set for scup in 2014 and 2015, however, the Council and ASFMC will review these catch limits and management measures in October 2013 and may revise as necessary.

NMFS statistical areas are shown in Figure 4. Vessel trip report (VTR) data suggest that statistical area 537 was responsible for the largest percentage of the catch in 2012, with statistical area 539 having the majority of trips that caught scup (Table 2).

Table 2: Statistical areas that accounted for at least 5 percent of the scup catch in 2012, as well as associated trips. Source: NMFS VTR data.

Statistical Area	Scup Catch (percent)	Scup Trips (N)
537	26.79	809
613	18.73	938
611	14.95	1555
539	13.02	1658
616	9.02	273

Based on VTR data for 2012, the bulk of scup landings were taken by bottom otter trawls (96 percent), followed by pots and traps (~1 percent), and hand lines (~1 percent). Other gear types each accounted for less than 1 percent of landings. Current commercial regulations for scup require a 9 inch-TL minimum fish size in the commercial fishery, and the following gear requirements for otter trawls: minimum mesh size of 5 inch for the first 75 meshes from the terminus of the net, and for codends constructed with fewer than 75 meshes, a minimum mesh size of 5 inch throughout the net. The threshold level used to trigger the minimum mesh requirements is 500 lbs of scup from November 1 through April 30 and 200 lb or more of scup from May 1 through October 31 (Table 1). In addition, the current regulations require a circular escape vent of 3.1 inch, a square escape vent of 2.25 inch, or a rectangular escape vent of an equivalent size.

Gear restricted areas (GRAs) were implemented by NMFS in 2000 to reduce discards of scup in small mesh fisheries, and became effective on November 1, 2000 for the northern area with an exemption for the herring fishery. The GRAs were modified in size in December 2000 to include areas farther south that were identified as areas of potential scup and *Loligo* interactions. Mackerel and herring small mesh fisheries were exempt from the regulations. In 2005, based on recommendations from the Monitoring Committee, the boundary of the southern GRA was moved 3 longitudinal minutes to the west.

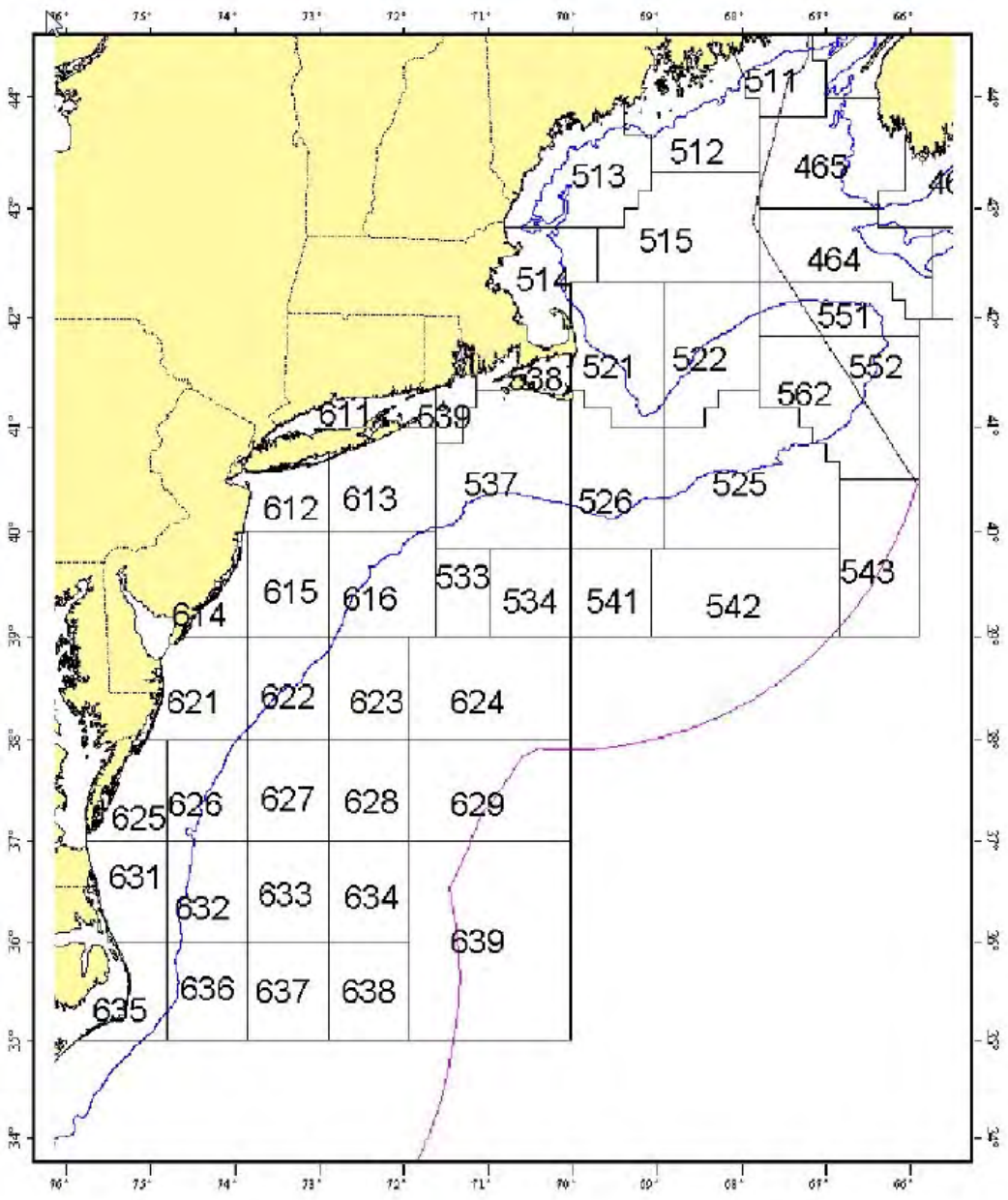

Figure 4: National Marine Fisheries Service Statistical Areas.

The Winter I possession limit for 2013 is 50,000 lb, until 80 percent of the landings are reached, at which point the possession limit drops to 1,000 lb. A possession limit of 2,000 lb is used in Winter II, unless a transfer of quota occurs between Winter I and Winter II. In that case, the Winter II possession limit should increase at 1,500 lb intervals for every 500,000 lb of scup transferred, i.e., if 1.0 million lb is transferred then the limit would be increased by 3,000 lb to result in a 5,000 lb possession limit. The possession limits were chosen as an appropriate balance between the economic concerns of the industry (i.e., landing enough scup to make the trip economically viable) and the need to ensure the equitable distribution of the quota over the period.

The 50,000 lb possession limit for Winter I was first put in place in 2012, representing an increase from the 2011 Winter I possession limit of 30,000 lb. A threshold analysis was conducted to examine how the change in possession limit may change the landings patterns for the winter periods (Table 3). These data indicate that the overall number of trips taken in Winter I increased from 2011 to 2012, but decreased from 2012 to 2013. However, from 2012 to 2013, there was an overall increase in the percentage of trips landing more than 5,000 lb of scup.

Table 3: The total number of vessels, trips, and associated pounds for a given threshold (pounds) of scup for 2011-2013. Note: 2013 data are preliminary. C = Confidential.

Time Period	Threshold	Vessels	%	Trips	%	Pounds	%
	>=1	207	100%	3,342	100%	5,807,280	100%
2011	>=500	128	62%	1,573	47%	5,590,146	96%
Winter	>=5000	82	40%	337	10%	3,198,149	55%
I	>=10000	54	26%	115	3%	1,665,417	29%
(Jan-Apr)	>=15000	30	14%	38	1%	750,052	13%
	>=20000	14	7%	17	1%	391,898	7%
	>=25000	4	2%	4	0%	106,350	2%
	>=30000	0	0%	0	0%	0	0%
Time Period	**Threshold**	**Vessels**	**%**	**Trips**	**%**	**Pounds**	**%**
	>=1	215	100%	5,170	100%	5,922,130	100%
2012	>=500	111	52%	2,028	39%	5,556,630	94%
Winter	>=5000	58	27%	256	5%	2,558,588	43%
I	>=10000	35	16%	77	1%	1,342,352	23%
(Jan-Apr)	>=15000	19	9%	41	1%	915,408	15%
	>=20000	11	5%	19	0%	536,305	9%
	>=25000	8	4%	10	0%	331,895	6%
	>=30000	4	2%	5	0%	195,540	3%
	>=50000	0	0%	0	0%	0	0%
Time Period	**Threshold**	**Vessels**	**%**	**Trips**	**%**	**Pounds**	**%**
	>=1	213	100%	3,738	100%	7,427,555	100%
2013	>=500	135	63%	1,924	51%	7,212,590	97%
Winter	>=5000	77	36%	424	11%	4,402,159	59%
I	>=10000	46	22%	151	4%	2,501,705	34%
(Jan-Apr)	>=15000	26	12%	63	2%	1,437,985	19%
	>=20000	19	9%	36	1%	969,098	13%
	>=25000	12	6%	17	0%	548,563	7%
	>=30000	8	4%	11	0%	387,270	5%
	>=50000	0	0%	0	0%	0	0%

Table 3, Continued:

Period	Threshold	Vessels	%	Trips	%	Pounds	%
	>=1	181	100%	3,259	100%	2,638,811	100%
2011	>=500	91	50%	1,183	36%	2,416,371	92%
Winter	>=5000	39	21%	91	3%	614,747	23%
II	>=10000	c	c	c	c	c	c
(Nov-Dec)	>=15000	c	c	c	c	c	c
	>=20000	0	0%	0	0%	0	0%
	>=25000	0	0%	0	0%	0	0%
	>=30000	0	0%	0	0%	0	0%
Period	**Threshold**	**Vessels**	**%**	**Trips**	**%**	**Pounds**	**%**
	>=1	176	100%	3,000	100%	2,810,628	100%
2012	>=500	117	66%	1,239	41%	2,572,357	92%
Winter	>=5000	36	20%	63	2%	467,486	17%
II	>=10000	c	c	c	c	c	c
(Nov-Dec)	>=15000	c	c	c	c	c	c
	>=20000	0	0%	0	0%	0	0%
	>=25000	0	0%	0	0%	0	0%
	>=30000	0	0%	0	0%	0	0%

Scup ex-vessel revenues based on dealer data have ranged from $3.3 to $11.00 million for the 1994 through 2012 period. The mean price for scup (unadjusted) has ranged from a low of $0.55/lb in 2011 to a high of $1.46/lb in 1998 (Figure 5), with a strong price-volume relationship exhibited in the time series. In 2012, 15.70 million pounds of scup were landed generating $11.00 million in revenues.

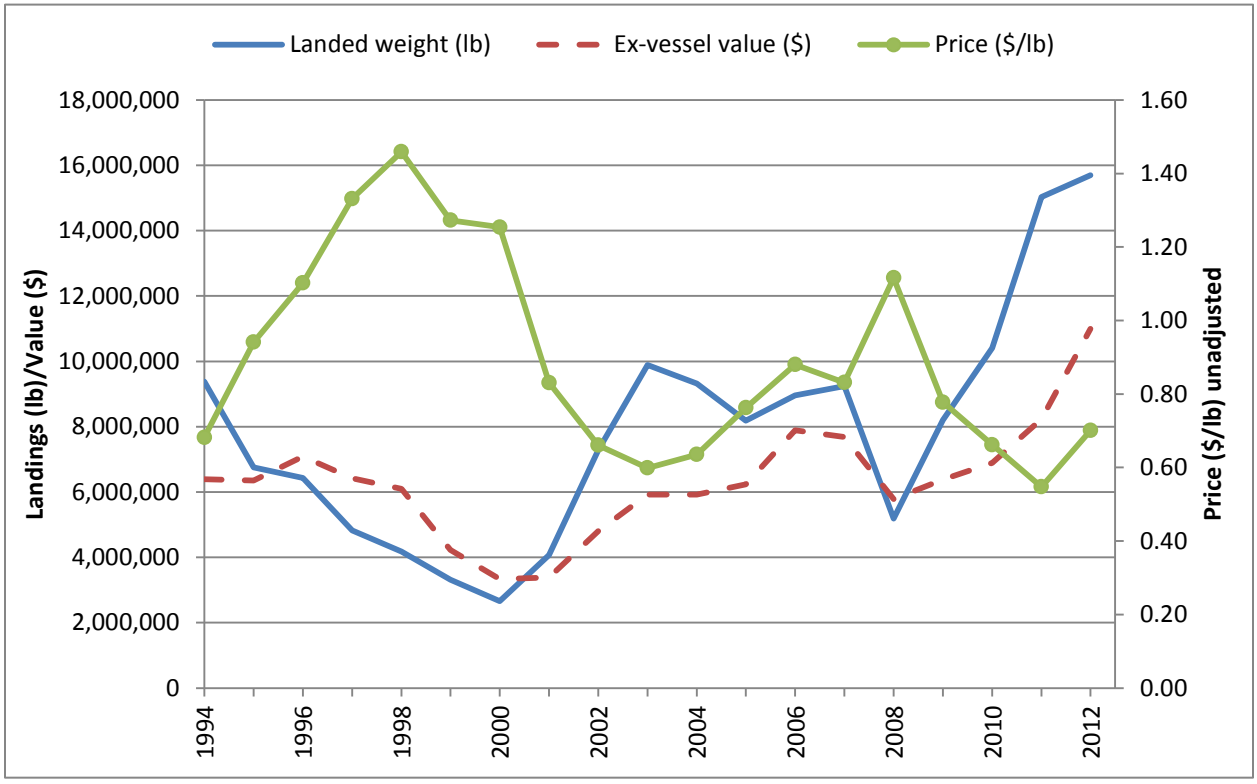

Figure 5: Landings, ex-vessel value, and price (unadjusted) for scup, Maine through North Carolina, 1994-2012.

When examining the landings and prices by period for 2006-2012, summer period prices are generally higher than winter period prices (Table 4). As landings have increased, price has generally decreased.

The ports and communities that are dependent on scup are fully described in Amendment 13 to the FMP. Additional information on "Community Profiles for the Northeast US Fisheries" can be found at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

Table 4: Commercial scup landings, ex-vessel value, and nominal price, by period, 2006-2012.

				Nominal
		Landings	Nominal	Price
Year	Period	(lbs)	Value ($)	Mean ($/lb)
2006	Winter I	3,219,929	2,865,174	0.89
	Summer	3,626,215	3,772,330	1.04
	Winter II	2,115,323	1,250,146	0.59
	Total	8,961,467	7,887,650	0.88
2007	Winter I	4,254,987	3,096,496	0.73
	Summer	3,400,934	3,427,949	1.01
	Winter II	1,590,747	1,164,801	0.73
	Total	9,246,668	7,689,246	0.83
2008	Winter I	1,933,253	2,259,335	1.17
	Summer	2,359,240	2,792,505	1.18
	Winter II	894,139	736,977	0.82
	Total	5,186,632	5,788,817	1.12
2009	Winter I	3,072,652	2,561,821	0.83
	Summer	3,774,583	2,932,300	0.78
	Winter II	1,356,962	887,852	0.65
	Total	8,204,197	6,381,973	0.78
2010	Winter I	4,175,268	2,485,122	0.60
	Summer	4,748,711	3,239,256	0.68
	Winter II	1,482,874	1,166,938	0.79
	Total	10,406,853	6,891,316	0.66
2011	Winter I	5,807,280	2,775,813	0.48
	Summer	6,586,069	3,911,748	0.59
	Winter II	2,638,811	1,543,157	0.58
	Total	15,032,160	8,230,718	0.55
2012	Winter I	5,411,976	4,019,283	0.74
	Summer	6,747,578	4,704,339	0.70
	Winter II	2,557,370	1,220,120	0.48
	Total	15,702,015	11,000,353	0.70

2012 NMFS dealer data were used to examine recent landings patterns among ports. The top commercial landings ports for scup by pounds landed are shown in Table 5. A "top port" is defined as any port that landed at least 100,000 lb of scup. Related data for the recreational fisheries are shown in subsequent sections. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels.

Table 5: Top ports of landing (in lb) for scup (SCP), based on NMFS 2012 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year. Note: C = Confidential

Port	Landings of Scup (lb)	# of Scup Vessels
PT. JUDITH, RI	5,398,830	118
MONTAUK, NY	2,852,359	94
NEW BEDFORD, MA	1,227,978	57
NEW LONDON, CT	818,946	11
PT. PLEASANT, NJ	614,788	25
STONINGTON, CT	536,666	21
HAMPTON BAY, NY	493,447	31
MATTITUCK, NY	389,878	4
NEWPORT, RI	244,623	18
LITTLE COMPTON, RI	219,032	18
BELFORD, NJ	191,840	18
FALL RIVER, MA	C	C
HAMPTON, VA	181,654	22
PT. LOOKOUT, NY	171,958	8
TIVERTON, RI	168,726	4
CAPE MAY, NJ	146,545	25
AMAGANSETT, NY	142,148	3
EAST LYME, CT	138,092	3
MATTAPOISET, MA	123,226	3
OTHER CONNECTICUT	C	C
NEWPORT NEWS, VA	100,542	18

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (46) who bought scup in 2012 (Table 6). All dealers bought approximately $11.00 million of scup in 2012.

Table 6: Dealers reporting buying scup, by state in 2012. Note: C = Confidential.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC
	37	40	10	46	15	C	C	8	7

Recreational Fishery

There is a significant recreational fishery for scup in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. In Federal waters, the recreational scup fishery is managed on a coastwide basis. However, the ASMFC applies a regional management approach, where the four northern states (New York through Massachusetts) developed regulations intended to land 97 percent of the allocation. The 2013 recreational fishing measures in Federal waters are given in Table 1, and the 2012 state-specific measures are given in Table 7.

Recreational data have been available through the Marine Recreational Information Program (MRIP) since 2004, and prior to 2004 were available through the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational catch and landings of scup peaked in 1986 with landings in numbers and weight at the lowest levels in 1998 (Table 8). When anglers are intercepted through the surveys conducted for the recreational statistics programs, they are asked about where the majority of their fish were caught (i.e., inland, state waters (<=3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of scup are landed recreationally (Table 9).

Table 7: Scup recreational fishing measures in state waters for 2013, by state.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts For Hire	10	45 fish from May 1- June 30; 30 fish from July 1- Dec 31	July 1- December 31
Private Angler	10	30 fish; private vessels with 6 or more persons aboard are prohibited from possessing more than 150 scup per day	May 1- December 31
Rhode Island For Hire	10	30 fish from May 1-Aug 31 and Nov 1-Dec 31; 45 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10"; and 9" or greater for shore mode at 3 designated sites	30 fish	May 1- December 31
Connecticut For Hire	11	20 fish from May 1-Aug 31 and Nov 1-Dec 31; 45 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10.5; and 9" for shore mode at 46 designated sites	20 fish	May 1- December 31
New York For Hire	10	30 fish from May 1-Aug 31 and Nov 1-Dec 31; 45 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10	30 fish	May 1- December 31
New Jersey	9	50 fish	Jan 1-Feb 28 and July 1 – December 31
Delaware	8	50 fish	All Year
Maryland	8	50 fish	All Year
Virginia	8	50 fish	All Year
North Carolina	8	50 fish	All Year

Table 8: Recreational scup landings data from the NMFS recreational statistics databases, 1981-2012.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	10,376	9,084	5,812
1982	7,181	6,454	5,205
1983	10,155	8,837	6,252
1984	7,775	6,057	2,416
1985	13,861	10,810	6,093
1986	30,872	24,823	11,605
1987	12,377	9,916	6,197
1988	7,539	6,062	4,267
1989	11,394	9,176	5,557
1990	10,172	8,043	4,140
1991	16,852	13,279	8,087
1992	10,077	7,764	4,412
1993	7,076	5,663	3,197
1994	5,650	4,270	2,628
1995	3,767	2,419	1,344
1996	4,676	2,972	2,156
1997	3,070	1,916	1,198
1998	2,670	1,211	875
1999	4,636	3,251	1,886
2000	11,284	7,244	5,443
2001	9,925	5,099	4,262
2002	7,580	3,647	3,624
2003	14,661	9,452	8,484
2004	13,426	7,154	7,227
2005	7,038	2,589	2,678
2006	9,615	3,434	3,696
2007	10,051	4,748	4,593
2008	10,706	3,487	3,763
2009	8,704	3,134	3,221
2010	11,147	5,148	5,980
2011	6,473	3,056	3,663
2012	8,829	3,668	4,166

Table 9: Percentage of scup recreational landings (MRIP Type A+B1 in number of fish) by year and area, Maine through North Carolina, 2003-2012. Area information is self-reported based on the area where the majority of fishing activity occurred per angler trip.

Year	State <= 3 mi	EEZ > 3 mi
2003	95.2	4.8
2004	94.8	5.2
2005	98.2	1.8
2006	93.6	6.4
2007	98.3	1.7
2008	96.2	3.8
2009	98.1	1.9
2010	95.8	4.2
2011	96.4	3.6
2012	99.5	0.5
Avg. 2003-2012	96.6	3.4
Avg. 2010- 2012	97.2	2.8

Table 10: State contribution (as a percentage) to total recreational landings of scup (MRIP Type A+B1 in number of fish) from Maine through North Carolina, 2011 and 2012.

State	2011	2012
Maine	0.0	0.0
New Hampshire	0.0	0.0
Massachusetts	25.7	43.3
Rhode Island	18.6	13.6
Connecticut	30.5	23.7
New York	23.4	16.1
New Jersey	1.5	3.3
Delaware	0.0	0.0
Maryland	0.0	0.0
Virginia	0.3	0.0
North Carolina	0.0	0.0
Total	**100%**	**100%**

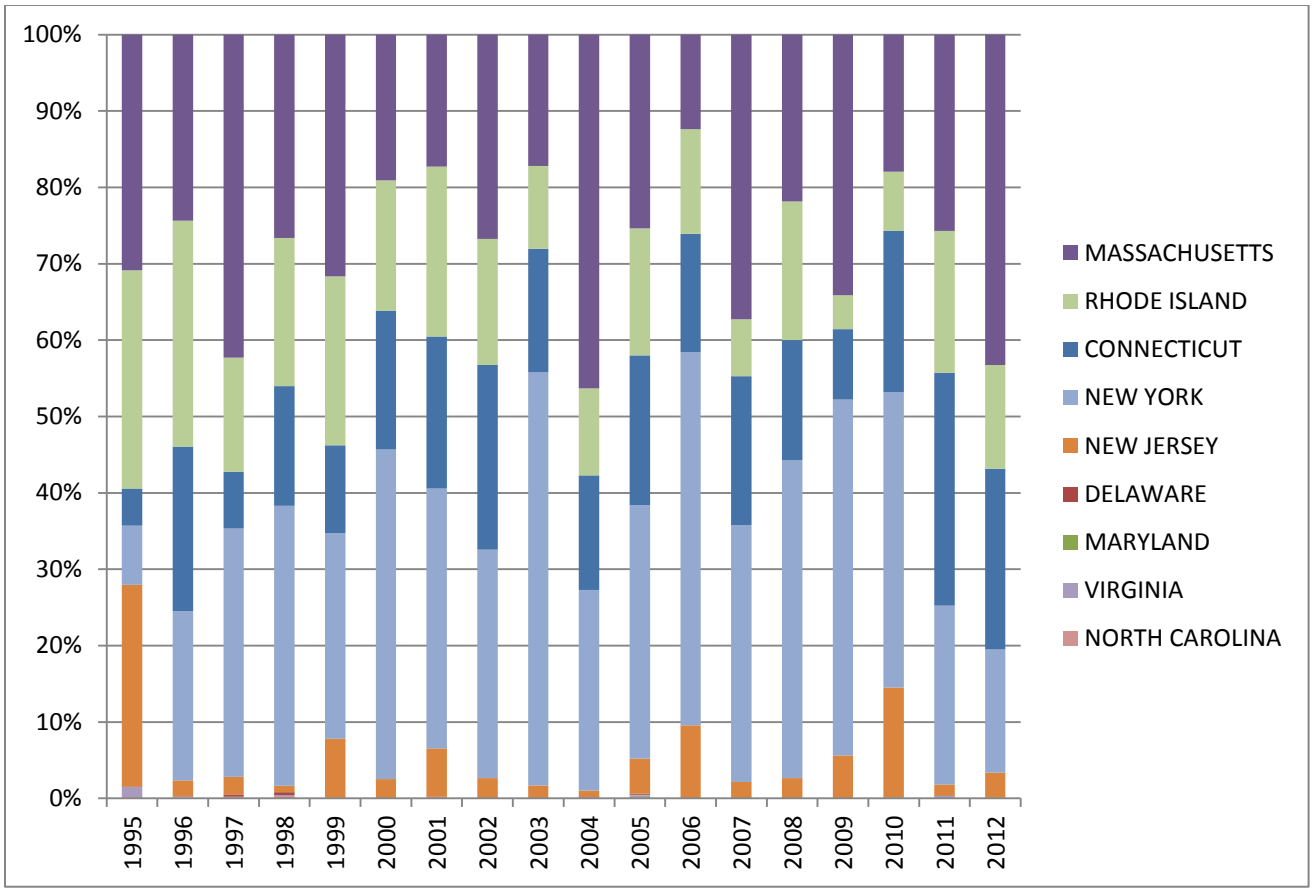

Figure 6: State contribution (as a percentage) of total recreational landings of scup (MRIP Type A + B1 in number of fish), from Massachusetts through North Carolina, 1995-2012.

The states of New York, Connecticut, and Massachusetts land the majority of fish (Table 10; Figure 6). The more southern states of Delaware through North Carolina land very few scup. Since the mid-1990s, the state contributions of landings (in numbers of fish) have fluctuated from year to year but few consistent trends are evident (Figure 6).

In 2012, there were 750 recreational vessels (i.e., party and charter vessels) that held scup Federal recreational permits. Many of these vessels also hold recreational permits for summer flounder and black sea bass. Landings by mode indicate that private/rental fishermen are responsible for the majority of scup landings (Table 11).

Table 11: The number of scup landed from Maine through North Carolina by mode, 1981-2012.

Year	Shore	Party/Charter	Private/Rental
1981	772,162	1,054,555	7,256,991
1982	833,427	1,393,723	4,226,957
1983	2,227,113	2,996,660	3,612,789
1984	1,299,566	227,735	4,530,009
1985	1,121,593	325,846	9,362,607
1986	1,898,860	3,228,151	19,696,033
1987	522,310	583,977	8,809,697
1988	698,339	1,137,625	4,226,347
1989	882,602	1,033,319	7,260,510
1990	434,743	1,302,791	6,305,463
1991	1,625,127	2,250,041	9,403,917
1992	1,003,648	1,017,369	5,743,163
1993	284,525	1,762,459	3,616,035
1994	229,924	918,217	3,122,100
1995	222,397	837,390	1,359,239
1996	120,597	451,615	2,399,995
1997	141,367	453,067	1,322,002
1998	117,056	164,931	929,147
1999	197,876	821,995	2,230,778
2000	550,951	1,140,132	5,552,865
2001	766,084	768,894	3,563,840
2002	505,079	1,309,169	1,832,593
2003	858,699	1,329,585	7,264,027
2004	776,634	1,508,921	4,867,979
2005	394,888	165,760	2,028,784
2006	321,081	605,951	2,507,108
2007	352,618	516,174	3,879,035
2008	385,583	868,771	2,232,589
2009	209,882	1,122,189	1,801,987
2010	383,464	1,280,211	3,484,602
2011	302,056	470,572	2,283,583
2012	266,228	1,146,896	2,255,366
% of Total, 1981-2012	10%	17%	73%
% of Total, 2008-2012	8%	26%	65%

The NMFS angler expenditure survey summarizes a variety of costs associated with recreational fishing in the Northeast (Table 12). In addition, Steinback et al., 2009 summarized the reasons for fishing, with a majority of anglers (about 85 percent) fishing either mostly or fully for recreational purposes (Table 13).

Table 12: Average daily trip expenditures ($ unadjusted) by recreational fishermen in the Northeast region by mode, in 2006. Source: Genter and Steinback (2008)

Expenditures	$		
	Party/Charter	Private/Rental	Shore
Private transportation	13.88	11.03	12.94
Public transportation	0.26	0.07	0.40
Auto rental	0.27	0.02	0.10
Food from grocery stores	7.40	4.92	7.33
Food from restaurants	8.70	3.42	9.28
Lodging	10.0	2.64	14.90
Boat fuel	0	9.54	0
Boat or equipment rental	0.05	0.19	0.03
Charter fees	57.76	0	0
Charter crew tips	3.0	0	0
Catch processing	0.02	0	0
Access and parking	0.44	1.11	1.32
Bait	0.31	3.42	3.25
Ice	0.39	0.59	0.39
Tackle used on trip	1.87	2.04	3.98
Tournament fees	1.10	0.04	0.02
Gifts and souvenirs	1.67	0.10	1.45
Total	107.13	39.14	55.39

Table 13: Purpose of Marine Recreational Fishing in the Northeast. Source: Steinback et al., 2009.

	Percent	Number of anglers in 2005 (thousands)
Purpose of recreational fishing trips		
All for food or income	2.1	92.4
Mostly for food or income	<1.0	34.3
Both for recreation and for food or income	11.7	514.8
Mostly for recreation	13.2	580.8
All for recreation	72.2	3,176.8

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MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 24, 2013

TO: Council

FROM: Kiley Dancy, Staff

SUBJECT: Black Sea Bass Management Measures for 2014 and 2015

The following materials are enclosed for Council consideration of the above subject:

1) Summary of Monitoring Committee Recommendations (*See Summer Flounder Briefing Book Tab*)
2) September 2013 Scientific and Statistical Committee Meeting Report (*See Summer Flounder Briefing Book Tab*)
3) Staff Recommendation Memo
4) Comment letter from Capt. Monty Hawkins
5) Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports (*See Summer Flounder Briefing Book Tab*)
6) Black Sea Bass Advisory Panel Information Document

Links to the following additional reference materials can be found on the October 2013 briefing book page on the Council's website, at http://www.mafmc.org/briefing/october-2013:

1) April 2013 Black Sea Bass Data Workshop Recommendation Summary
2) January 2013 Scientific and Statistical Committee Meeting Report (special meeting for consideration of black sea bass issues)

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: September 5, 2013

TO: Chris Moore, Executive Director

FROM: Kiley Dancy, Staff

SUBJECT: Black Sea Bass Management Measures for 2014 and 2015

Executive Summary

Based on the latest stock assessment update in July of 2012, the black sea bass stock is not overfished and overfishing is not occurring. The 2011 stock was estimated to be at 102% of the spawning stock biomass at maximum sustainable yield (SSBMSY). Multi-year specifications were previously set for black sea bass through the 2014 fishing year (Table 1). Staff recommend no changes to the 2014 specifications and an extension of these same specifications into 2015.

Table 1: Specifications for black sea bass in 2014 (current) and 2015 (staff recommended).

2014 (current)	**ABC**	5.50 mil lb (2,495 mt)
	Commercial ACL = ACT	2.60 mil lb (1,179 mt)
	Recreational ACL = ACT	2.90 mil lb (1,315 mt)
2015 (staff recommended)	**ABC**	5.50 mil lb (2,495 mt)
	Commercial ACL = ACT	2.60 mil lb (1,179 mt)
	Recreational ACL = ACT	2.90 mil lb (1,315 mt)

After adjusting for an allowance of up to 3% of the total allowable landings (TAL) for the Research Set-Aside (RSA) Program in 2014, the commercial quota is 2.17 million lb (986 mt), and the recreational harvest limit is 2.26 million lb (1,026 mt). Staff do not recommend any change to the current minimum fish size (11 inch-TL) or gear requirements (4.5 inch mesh with 500/100 lb trigger; current pot/trap vent requirements).

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's Scientific and Statistical Committee (SSC) to provide ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch (ABC), prevention of overfishing, and achieving maximum sustainable yield. The Council's catch limit recommendations for any given fishing year cannot exceed the ABC recommendation of the SSC. In addition, the Monitoring Committees established by the fishery management plan (FMP) are responsible for developing recommendations for management measures designed to achieve the recommended catch limits.

For fishing year 2015, the SSC will provide an ABC for black sea bass that addresses scientific uncertainty, and the Monitoring Committee will recommended annual catch targets (ACTs) and management measures to address management uncertainty. For 2014, both the SSC and Monitoring Committee will review the measures currently implemented and determine if changes may be warranted. Based on the SSC and Monitoring Committee recommendations, the Council will make a recommendation to the National Marine Fisheries Service (NMFS) Northeast Regional Administrator. Because these species are cooperatively managed with the Atlantic States Marine Fisheries Commission, the Commission's Summer Flounder, Scup, and Black Sea Bass Board will meet jointly with the Council to recommend black sea bass management measures. In this memorandum, information is presented to assist the SSC and Monitoring Committee in developing recommendations for the Council and Board to consider for the 2014 and 2015 fishing years for black sea bass.

Additional relevant information about the fishery and past management measures is presented in the Fishery Performance Report for black sea bass developed by the Council and Commission Advisory Panels, as well as in the corresponding Black Sea Bass Information Document prepared by Council staff.

Catch and Landings

Based on dealer data and Marine Recreational Information Program (MRIP) data, 2012 commercial and recreational landings were 1.74 million lb (789 mt) and 3.30 million lb (1,497 mt), respectively. The 2013 commercial landings as of the week ending August 24, 2013, indicate that 79% of the coastwide commercial quota has been landed (Table 2).

Table 2: The 2013 black sea bass quotas and the amount of black sea bass landed by commercial fishermen, in lb, in each state.

	Commercial			Research
State	**Cumulative Landings (lb)[a]**	**Quota (lb)**	**Percent of Quota (%)**	**Set-Aside Landings (lb)a**
ME	0			0
NH	0			0
MA	140,542			11,771
RI	207,335			6,860
CT	20,047			358
NY	98,703			19,114
NJ	227,429			3,430
DE	48,242			0
MD	191,977			0
VA	421,081			103
NC	59,102			0
Other	0			0
Totals	**1,414,458**	**1,780,000**	**79**	**41,636**

[a] Quotas adjusted for research set-aside and overages. Source: NMFS Weekly Quota Report for week ending August 24, 2013.

Regulatory Review

In July 2012, the SSC met to recommend an ABC for black sea bass for fishing year 2013, and to consider specifying multi-year ABCs for up to three years. The SSC recommended ABCs for black sea bass for 2013, 2014, and 2015.

The overfishing limit (OFL) provided by the assessment update for 2013 was specified as 7.00 million lb (3,175 mt), based on an F_{MSY} proxy of $F_{40\%} = 0.44$. However, the SSC did not endorse this estimate because of concerns about the unresolved uncertainty in the OFL related to stock mixing, life history, and natural mortality. The SSC recommended an ABC of 4.50 million lb (2,041 mt), based on the same constant catch approach used for black sea bass from 2010-2012.

In December of 2012, the Council requested that the SSC revisit its 2013 and 2014 recommendations for black sea bass ABC, re-examine the assessment level, and respond to a recommendation from the Monitoring Committee to examine additional black sea bass data. The SSC met in January 2013 to review and evaluate new information available relative to fishery performance (including recent catch data) and abundance and recruitment (i.e., state survey data). The SSC concluded that there was little information in these data that would lead to a change in the ABC recommendation, the constant catch approach, or the designation of the assessment as level 4. However, the SSC believed it was appropriate to re-evaluate whether the constant catch level used since 2010 (4.50 million lb) was still appropriate. The SSC evaluated the performance of the ABC and concluded that its continued application into 2013 and 2014 was overly conservative, and recommended a 2013-2014 ABC based on a revised constant

catch level of 5.50 million lb (2,494 mt). This corresponds to a commercial ACL and ACT of 2.60 million lb (1,179 mt) and a recreational ACL and ACT of 2.90 million lb (1,315 mt).

The SSC considered black sea bass to be a level 4 assessment, and considered the following to be the most significant sources of uncertainty: difficulty in determining appropriate reference points due to atypical life history strategy (protogynous hermaphrodite); assessment assumption of a completely mixed stock, despite tagging analyses suggesting otherwise; uncertainty with respect to M (because of the unusual life history strategy the current assumption of a constant M in the model for both sexes may not adequately capture the dynamics in M); and concern about the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment.

Management measures in the commercial fishery other than quotas and harvest limits (i.e., minimum fish size, gear requirements, etc.) have remained constant since 2006.

Stock Status and Biological Reference Points

The most recent accepted benchmark assessment on black sea bass was peer-reviewed and accepted in December 2008 by the DPSWG Peer Review Panel. Documentation associated with this assessment and previous stock assessments, such as reports on stock status, including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) panelist reports, are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw/.

The biological reference points for black sea bass were updated as part of the 2012 assessment update[1], as the result of several changes made to the information incorporated into the SCALE model. The updated fishing mortality threshold for black sea bass is $F_{MSY} = F_{40\%}$ (as F_{MSY} proxy) = 0.44, and SSB_{MSY} is 24.00 million lbs (10,880 mt). The minimum stock size threshold, one-half SSB_{MSY} is estimated to be 12.00 million lb (5,440 mt).

The July 2012 assessment update indicates the black sea bass stock was not overfished and overfishing is not occurring in 2011, relative to the biological reference points. Fishing mortality (F_{MULT}) in 2011 was F = 0.21, below the fishing mortality threshold of F=0.44. Total stock biomass in 2011 was estimated at 28.0 million lb (12,700 mt), above B_{MSY}. SSB in 2011 is estimated at 24.57 million lb (11,145 mt), and was at 102% of SSB_{MSY}. Recruitment estimated by the model was relatively constant through the time series with the exception of the 1999 and 2001 year classes. These cohorts appeared to be the driving force behind the increase in biomass and SSB. The estimated average recruitment (age one) in 2011 (2010 cohort) was 21.0 million fish.

[1]Shepherd, G.R. 2012. Black Sea Bass Assessment Summary for 2012. Northeast Fisheries Science Center.

Basis for 2014 and 2015 ABC Recommendation

Input from the Council's Visioning and Strategic Planning processes as well as from the Advisory Panel Fishery Performance Reports highlight stakeholder interest in increasing the stability of fishery management measures. This was a significant motivation in moving toward multi-year specifications, which are already in place in 2014 for black sea bass.

In April 2013, a black sea bass data workshop was sponsored by the Partnership for Mid-Atlantic Fisheries Science (PMFAS) and conducted by the Atlantic States Marine Fisheries Commission (ASMFC). The working group summarized available state, federal, and other fishery independent and dependent data and projects, and made a list of research recommendations to address concerns regarding uncertainties in the black sea bass stock assessment. The working group concluded that the additional data sets and analyses examined would not likely result in any near-term changes in the perception of uncertainty in the assessment, and similarly that it was highly unlikely that perception of uncertainty would change as the result of an assessment update. The working group recommended delaying the scheduled 2014 black sea bass benchmark stock assessment to 2016 or later, to allow for progress to be made on interim analyses and advances in modeling approaches.

Given that the current state of scientific information for black sea bass has changed little since the January 2013 SSC meeting, and that no new assessment updates are likely to be provided in 2014, staff recommend no changes to the 2014 specifications and recommend that these specifications be extended into the 2015 fishing year.

Other Management Measures

Recreational and Commercial ACLs

The acceptable biological catch (ABC) is equivalent to the total allowable catch (TAC) and the sum of the commercial and recreational ACL equals the ABC (Figure 2).

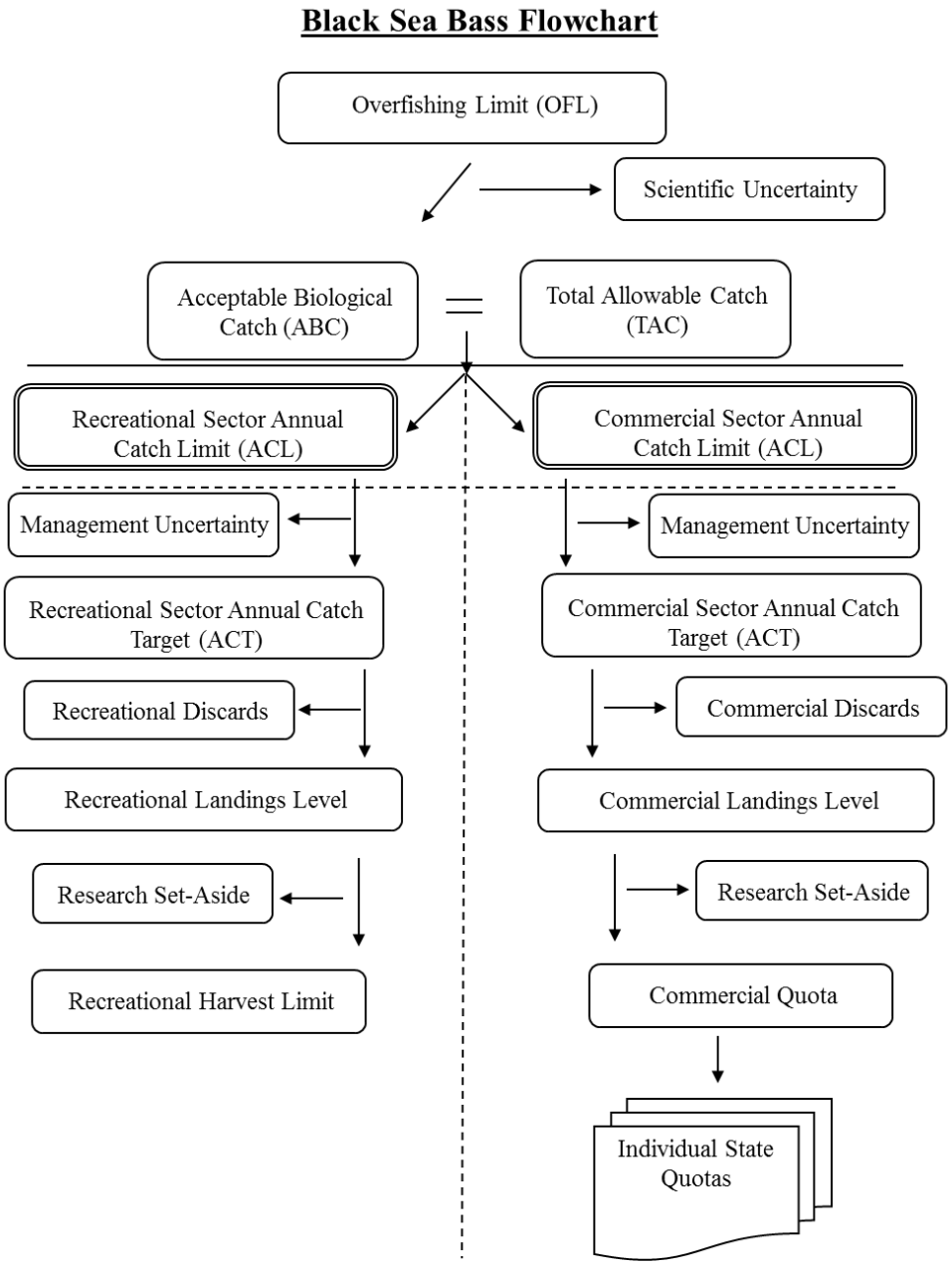

Figure 2: Flowchart for black sea bass catch and landings limits.

The ABC in place for 2014 is comprised of both landings and discards. Based on the allocation percentages in the FMP, 49% of the landings are allocated to the commercial fishery, and 51% to the recreational. Discards are apportioned based on the contribution from each fishing sector using the 2010-2012 average ratios; 61% of dead discards are attributable to the recreational fishery, 39% to the commercial.

Considerations for ACTs

The Black Sea Bass Monitoring Committee is responsible for recommending ACTs for the Council to consider. The relationship between the recreational and commercial ACTs, and other catch components are given in Figure 2. The Monitoring Committee may provide other recommendations relevant to setting catch limits consistent with the MSA. The Monitoring Committee should consider all relevant sources of management uncertainty in the black sea bass fishery and provide the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. The ACTs, technical basis for ACT recommendations, and sources of management uncertainty would be described and provided to the Council.

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

The recent year sector-specific landings performance indicates that the recreational fishery had been somewhat variable in its performance relative to the harvest limits, but has periodically experienced large overages, including a significant overage in 2012 (Table 3). Staff recommend a reduction in catch from the recreational ACL to address management uncertainty in the black sea bass fishery, including uncertainty with respect to the ability to constrain landings to desired levels. The application and appropriate magnitude of such a reduction should be evaluated by the Monitoring Committee.

The staff recommend the commercial ACL equal the commercial ACT because of the performance of commercial fishery and quota monitoring systems in place.

Table 3: Black sea bass commercial and recreational fishery performance relative to quotas and harvest limits, 2008-2012.

Year	Commercial Landings (mil lb)	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb)	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2008	1.883	2.206	-15%	1.571	2.108	-25%
2009	1.182	1.093	+8%	2.313	1.138	+103%
2010	1.676	1.759	-5%	2.979	1.830	+63%
2011	1.684	1.711	-2%	1.146	1.781	-36%
2012	1.736	1.710	2%	3.30[1]	1.32	+150%
5-yr Avg.	-	-	-2%	-	-	+51%

[1] Includes recreational landings for all of North Carolina (not post-stratified at Cape Hatteras).

Commercial Quota, Recreational Harvest Limit, and Research Set-Aside

The landings-based allocations (i.e., 49% commercial, 51% recreational) were maintained in the derivation of the sector-specific ACLs and ACTs, such that the sum of the sector-specific TALs (commercial or recreational landings levels) are equal to overall TAL. Current specifications include a commercial quota of 2.17 million lb (986 mt) and a recreational harvest limit of 2.26 million lb (1,026 mt) in 2014. The ASMFC allocates the commercial quota to each state based on the allocation percentages given in Table 4.

Table 4: The Commission state-by-state commercial allocation percentages.

State	Allocation (percent)
ME	0.5
NH	0.5
MA	13.0
RI	11.0
CT	1.0
NY	7.0
NJ	20.0
DE	5.0
MD	11.0
VA	20.0
NC	11.0
Totals	100

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 2014 and 2015 will not be determined until after the first four waves of the previous year's

recreational landings are reviewed. These data will be available in October 2013 (for fishing year 2013) and October 2014 (for fishing year 2014). The Monitoring Committee will meet in November of each year to review these landings data and make recommendations regarding changes in the recreational management measures (i.e., possession limit, minimum size, and season). Given the performance of the recreational fishery relative to the recreational harvest limit in recent years, management measures (i.e., minimum size, possession limits, and seasons) should be implemented that are designed to achieve the recreational ACT, while preventing the recreational ACL from being exceeded.

Gear Regulations and Minimum Fish Size - Commercial Fishery

Amendment 9 established minimum fish sizes for black sea bass in federal and state waters. The Council and Commission increased the size limit to an 11 inch-TL in 2002. Staff recommend that the size limit remain at 11 inch-TL. Amendment 9 also established gear regulations that became effective in December of 1996. Current regulations state that large trawl nets are required to possess a minimum of 75 meshes of 4.5 inch diamond mesh in the codend, or the entire net must have a minimum mesh size of 4.5 inch throughout. The threshold level used to trigger the minimum mesh requirement size is 500 lb from January through March and 100 lb from April through December. Staff recommend no change in these trawl mesh regulations.

The Council and Commission adopted modifications to the circle vent size in black sea bass pots/traps, effective in 2007, based on the findings of a Council and Commission sponsored workshop. The minimum circle vent size requirements for black sea bass pots/traps were increased from 2.375 inch to 2.5 inch. The requirements of 1.375 inch x 5.75 inch for rectangular vents and 2 inch for square vents remained unchanged. In addition, 2 vents are required in the parlor portion of the pot/trap. Staff recommend no change in these pot/trap regulations.

Dancy, Kiley

From: Capt. Monty Hawkins <mhawkins@mediacombb.net>
Sent: Wednesday, September 11, 2013 9:40 PM
To: Dancy, Kiley; Kerns, Toni; Coakley, Jessica; Gary Shepherd; John Manderson; Brown, Russ; Sam Rauch; Chris Moore; Beal, Robert; Bullard, John
Cc: O'Connell, Tom; Carrie Kennedy; Lynn Fegley; King, Howard; Luisi, Michael; Jim Uphoff
Subject: BSB's Response To Management

I believe you should all seriously ponder how the sea bass population climbed almost straight up from 1999 to 2003 despite recreational removals at greater than 50% - even 80% - of fish hooked.
When we were keeping 50 to 80% of all sea bass caught, the stock grew.
Now we keep well below 20% and the stock shrinks . .

Greetings Good Folks,
At the advisory panel meeting in Baltimore Tuesday a chart created by Gary was presented:
"Figure 2: Estimated black sea bass total and exploitable biomass (mt) from SCALE model update, 1968-2011. Also shown are the biological reference points associated with total biomass. Source: Shepherd 2012. "
Computer illiteracy exposed, I cannot copy & paste it. Googles easily.
Appearing to bottom in 1998 & peak in 2003, I think it very clearly shows the explosive population growth of sea bass in early management. It also shows how something has gone badly wrong since despite regulatory tightening in emergency closures & an enourmous northward habitat expansion in warming waters.
I believe you should all seriously ponder how the sea bass population climbed almost straight up despite recreational removals at greater than 50% - even 80% - of fish hooked.
I believe what I was told back then was true, "Every 9 inch sea bass has spawned, some twice."
Its nearly untrue now.
Bright blue knotheads unmistakable, we frequently saw 7.5 to 9 inch males in early management; sometimes by the thousand.
This year I've seen two. Two under 9 inch mature male sea bass..
In the early 2000s my clients often had limits. Pool winners were nearly always north of 4 pounds.
A cbass has to escape at least 7 years fishing effort to get 4 lbs.
Pool winners today are two pounds, sometimes three. Had a handful of fish over 4 this year.

Look at the catch data I've provided below. When we were keeping 50 to 80% of all sea bass caught the stock grew.
Now we keep well below 20% and the stock shrinks

..along with our season.

Were management to again increase our sea bass proportionally; Were we again to see our region's stock at, or near, habitat capacity: Only then would habitat's value be plainly seen.
If you learn to Fill Habitat To Capacity, then the only way to increase a population thereafter is to increase the habitat..
When a reef-fish population is nearing habitat capacity, the benefit of increasing habitat becomes plain to see.
It was in 2003.

Please note the lag in catch to regulation. That, for instance, all the fish we caught in 2003 were spawned by fish protected by a 9 & 10 inch size limit.. No closed season. No creel Limit..

You can't just shrug your shoulders and press on with tighter & tighter regulation.
You must discover what makes management work.

Regards,
Monty

One Week's Sea Bass Landings – An Average.

Year	Landed	Released	Total	% Kept	Size	Regs forming SSB
1997	19.1	4.3	23.4	81.6%	9	9 (self reg)
1998	21.1	3.1	24.2	87.2%	9	9 (partial state compliance)
1999	13.6	11.9	25.5	53.33%	10	9
2000	21.5	17.2	38.7	55.55%	10	9
2001	16.6	23.7	41.8	44.49%	11 *	10
2002	14.7	44.3	59.0	24.97%	11.5	10
2003	24.3	87.0	111.3	21.83%	12	10
2004	15.8	33.0	49.1	32.17%	12	11 (Feb/Mar Fluke Trawl Bycatch Event)
2005	18.5	43.3	61.8	29.93%	12	11.5
2006	18.9	53.1	72.0	26.24%	12	12
2007	16.6	32.6	49.8	33.33%	12	12
2008	12.7	32.5	45.2	28.09%	12	12
2009	13.3	57.1	70.5	18.86%	12.5	12
2010	10.1	27.0	37.0	27.29%	12.5	12 Gunshot Start
2011	12.9	82.5	95.3	13.53%	12.5	12 Gunshot
2012	07.7	38.5	45.1	17.07%	12.5	12.5 Gunshot
2013	05.2	28.7	33.9	15.34%	12.5	12.5 Gunshot

*First Year Of Possession Limit
** Gunshot Start (so the end of May should be outrageously good)
On "Regs forming SSB" I calculate size limit in play when the SSB was spawned.

Here I've assembled these various charts for comparison with older works.

Age WAA (g)

Age/weight from: **Estimating Black Sea Bass Natural Mortality Using Several Methods** - Julie L. Nieland and Gary R. Shepherd - October 2011

Original Graph in BOLD {page 28 - Table 1. Black sea bass mean weight at age (in grams)..} Conversion to pounds and brackets ( ) here from M. Hawkins and of no association to the authors.

Length Conversions Computed From "BSB Probability of Age at Length Key - G. Shepherd" by M. Hawkins. (attached) No one has reviewed these simple computations by M. Hawkins..

(0 - <0.25 lbs - 0 to 5.5 inches)

Age 1 - 112.92g - 0.25 lbs - 5.5 to 9.1 inches.

Age 2 - 243.19g - 0.54 lbs - 8.7 to 12.2 inches.

Age 3 - 395.48g - 0.871 lbs - (3 to 4 yrs) 10.6 to 16.1 inches.

Age 4 - 604.69g - 1.33 lbs - (4 to 7 yrs) 13.4 to 20.5 inches.

Age 5 - 861.95g - 1.90 lbs - (5 to 9 yrs) 16.5 to 22.0 inches.

Age 6 - 1279.68g - 2.82 lbs - Over 20 inches just becomes too fuzzy..

Age 7 - 1542.01g - 3.4lbs

Age 8 - 1821.36g - 4.01lbs

Age 9 - 1974.56g - 4.35 lbs

Age 10 - 2658.4g - 5.86 lbs

Age 11 - 3149.8g - 6.94 lbs

Age 12 - 3689.1g - 8.13 lbs

*

From tag returns we see a faster growth rate in southern Mid-Atlantic tautog than in their northern range. Presumably such a growth variance could also be found in sea bass.

As all living things, some individual fish grow faster - we know a 4 year old sea bass @ 20.5 inches will weigh more than 1.9 pounds..

Management should also look for false foundations of modern regulation in early MRFSS weights. From 1981 to 2000 the MRFSS has the average MAB sea bass at about .4 K or .88 pounds. That wouldn't have occurred until 2002 or so. The real average weight before and especially during early management would have been 0.125 K or .25 pounds....

Black Sea Bass Advisory Panel Information Document[1]

August 2013

Management System

The Fishery Management Plan (FMP) for black sea bass became effective in 1997 when it was incorporated into the Summer Flounder and Scup FMP. The FMP established the management unit for black sea bass (*Centropristis striata*) as the U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina to the U.S.-Canadian border. The FMP additionally included measures to ensure effective management of the black sea bass resource. Two management entities work cooperatively to develop fishery regulations for black sea bass: the Atlantic States Marine Fisheries Commission (ASMFC), and the Mid-Atlantic Fishery Management Council (MAFMC). The National Marine Fisheries Service (NMFS) works in conjunction with the MAFMC as the federal implementation and enforcement entity. This cooperative management endeavor was developed because significant portions of black sea bass catch are taken from both state (0-3 miles offshore) and Federal waters (3-200 miles offshore).

The commercial and recreational black sea bass fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. Black sea bass was under a stock rebuilding strategy beginning in 2000 until it was declared rebuilt in 2009. The FMP, including subsequent Amendments and Frameworks, is available on the Council website at: http://www.mafmc.org/fisheries/fmp/sf-s-bsb.

Basic Biology

Detailed information on black sea bass life history and habitat requirements can be found in the documents titled "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999) as well as in an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics (2nd Edition)" (Drohan et al. 2007). Electronic versions are available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. Information contained in these documents is summarized here.

The northern population of black sea bass spawns in the Middle Atlantic Bight over the continental shelf during the spring through fall, primarily between Virginia and Cape Cod, Massachusetts. Spawning begins in the spring in the southern portion of the population range, i.e., off North Carolina and Virginia, and progresses north into southern New England waters in the summer and fall. Collections of ripe fish and egg distributions indicate that the species spawns primarily on the inner continental shelf between Chesapeake Bay and Montauk Pt., Long

[1] Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of August 2013, unless otherwise noted.

Island. The duration of the larval stage and habitat-related settlement cues are unknown; therefore, distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are also very structure oriented, especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to be attractive to black sea bass, including shipwrecks, rocky and artificial reefs, mussel beds and any other object or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. During the summer, adult black sea bass share complex coastal habitats with other fishes including tautog, hakes, conger eel, sea robins and other transient species. Essential Fish Habitat for black sea bass consists of pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, and sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina.

Black sea bass attain a maximum size of around 60 cm (23.6 in) and 4 kg (8.8 lb), with a maximum age for females of 8 and age 12 for males (DPSWG 2009). Maturity data is routinely collected on Northeast Fisheries Science Center (NEFSC) survey cruises and model estimates for length suggest 50 percent maturity occurs at 20.4 cm (8.0 inches) with 95 percent maturity attained by 28 cm (11.0 inches).

Adult black sea bass are generalist carnivores that feed on a variety of infaunal and epibenthic invertebrates, especially crustaceans (including juvenile lobster, crabs, and shrimp), small fish, and squid. The NEFSC food habits database lists the spiny dogfish, Atlantic angel shark, skates, spotted hake, summer flounder, windowpane, and goosefish as predators of black sea bass.

Status of the Stock

The most recent accepted benchmark assessment on black sea bass, which used a statistical catch at length (SCALE) model, was peer-reviewed and accepted in December 2008 by the Data Poor Stock Working Group (DPSWG) Peer Review Panel (DPSWG 2009). Reports on "Stock Status," including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, Stock Assessment Review Committee (SARC) panelist reports, and DPSWG reports and peer-review panelist reports are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw/.

Based on the July 2012 assessment update, the stock was not overfished and overfishing was not occurring in 2011, relative to the DPSWG biological reference points. The 2011 stock was at 102% of the spawning stock biomass at maximum sustainable yield (SSB_{MSY}). Fishing mortality (F_{MULT}) in 2011 was F = 0.21, a decrease from F=0.41 in 2010 (Figure 1). This point estimate of F in 2011 is below the fishing mortality threshold of F=0.44. Estimates for 2011 total biomass were at 28.0 million lb (12,700 mt), above the value for B_{MSY}. Spawning stock biomass (SSB) in 2011 was estimated at 24.6 million lb (11,145 mt). 2011 SSB was 102% of SSB_{MSY} (24.0 million lb, 10,880 mt; Figure 2). Recruitment estimated by the model was relatively constant through the time series with the exception of the 1999 and 2001 year classes. These cohorts appeared to be the driving force behind the increase in biomass and SSB. The estimated average recruitment (age one) in 2011 (2010 cohort) was 21.0 million fish.

The DPSWG Panel noted that despite acceptance of the assessment model there was *"considerable uncertainty with respect to stock status*." The review Panel also recommended that the SSC *"recognize and allow for the sizeable uncertainty in stock status when establishing catch limits."*

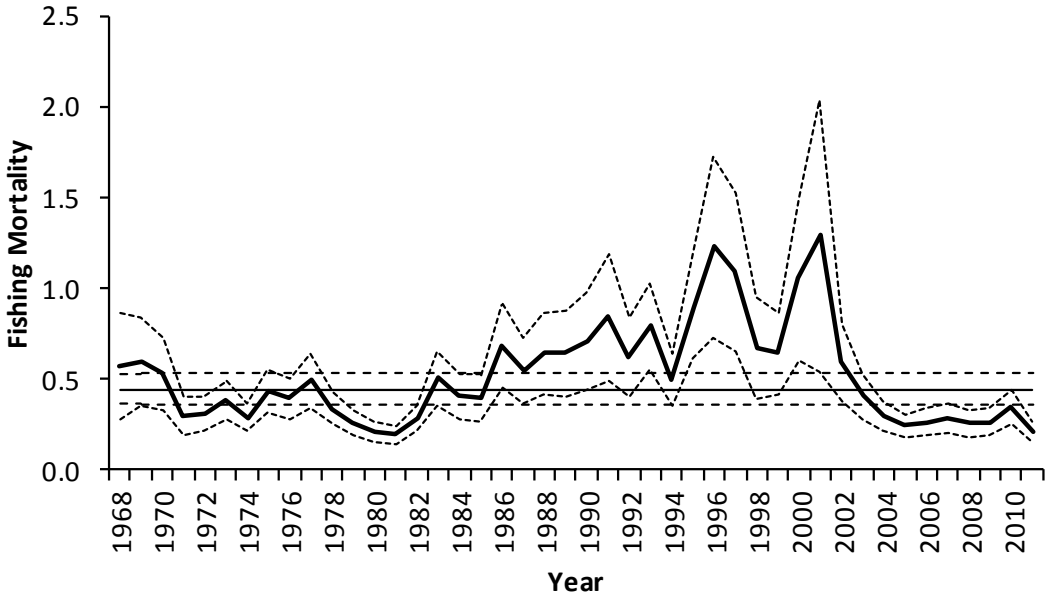

Figure 1: Estimated fishing mortality (+/- 2 standard deviations) of black sea bass from 1968-2011. Horizontal lines are $F_{MSY} \pm$ 80% confidence interval. Source: Shepherd 2012.

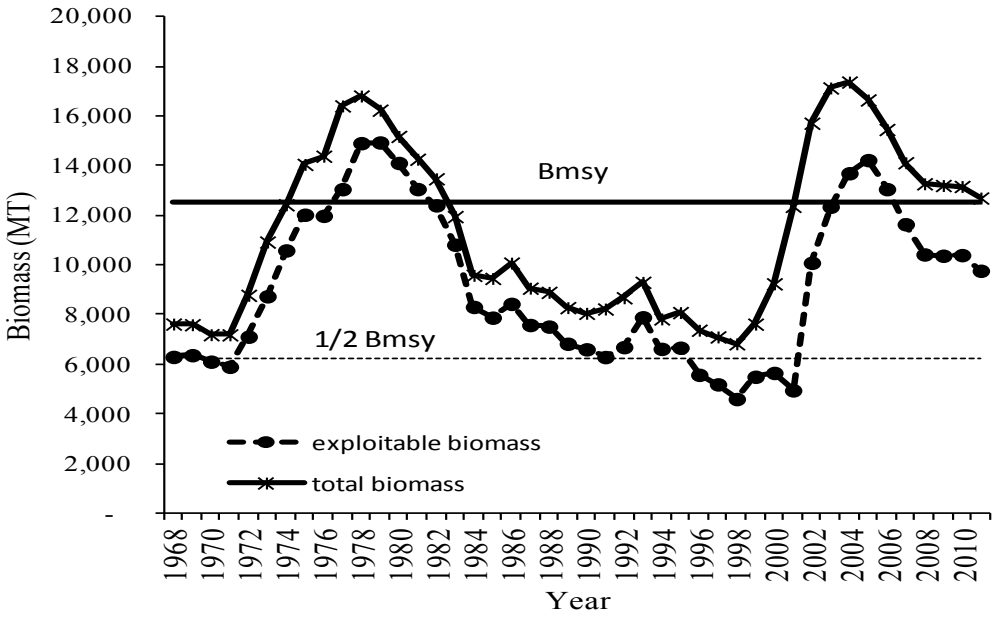

Figure 2: Estimated black sea bass total and exploitable biomass (mt) from SCALE model update, 1968-2011. Also shown are the biological reference points associated with total biomass. Source: Shepherd 2012.

Fishery Performance

There are significant commercial and recreational fisheries for black sea bass. Black sea bass is managed primarily using output controls (catch and landings limits), with 49 percent of the landings being allocated to the commercial fishery as a commercial quota and 51 percent allocated to the recreational fishery as a recreational harvest limit.

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for black sea bass. Permit data for 2012 indicate that 772 vessels held commercial permits for black sea bass. Total landings (commercial and recreational) peaked in the late 1980's at over 16 million lb, and in 2012 were about 5.0 million lb total (Figure 3).

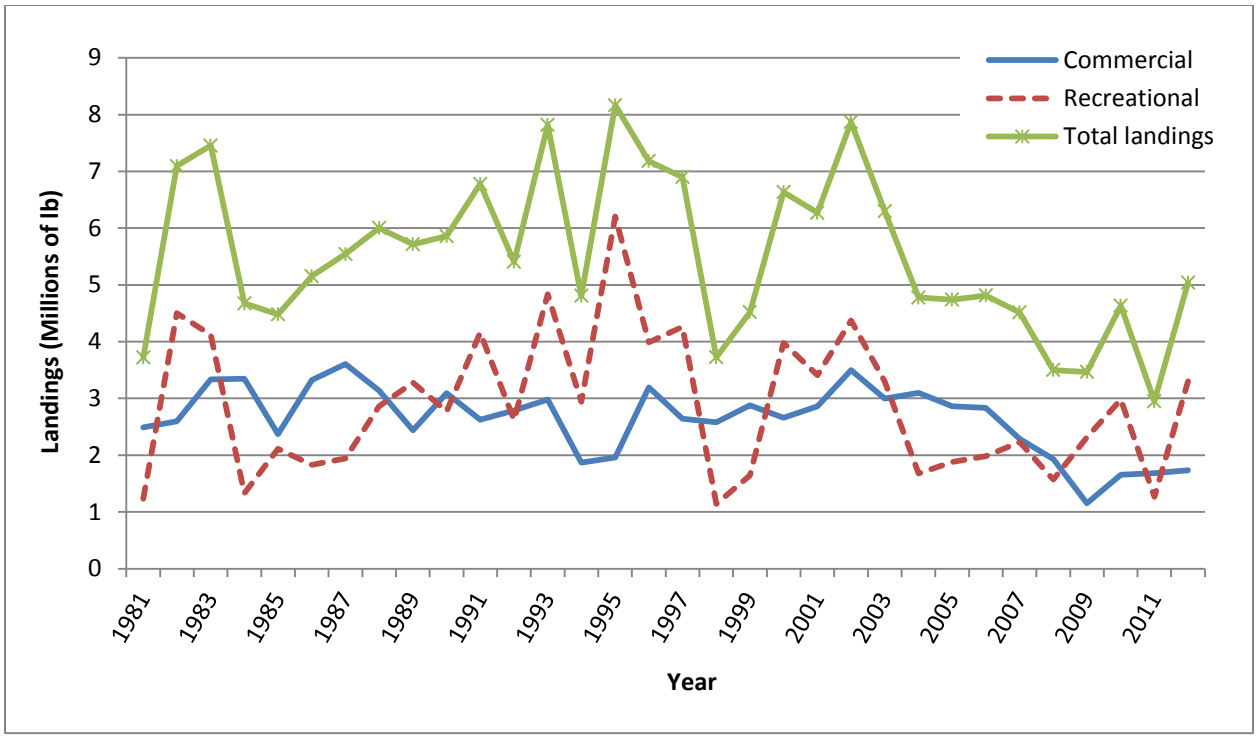

Figure 3: Commercial and Recreational U.S. Black Sea Bass Landings (Pounds) from Maine-North Carolina, 1981-2012.

Table 1 summarizes the black sea bass management measures for the 2003-2014 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2010, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest).

Table 1: Summary of management measures and landings for 2003 through 2014.

Management measures	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014[c]
ABC (m lb)	NA	NA	NA	NA	NA	NA	NA	4.500	4.500	4.500	5.50	5.50
TAC (m lb)	NA	NA	NA	NA	NA	NA	2.300	4.500	4.500	4.500	5.50	5.50
Commercial ACL (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.980	2.60	2.60
Com. quota–adjusted (m lb)[a]	3.012	3.768	3.950	3.832	2.377	2.026	1.093	1.759	1.711	1.710	2.17	2.17
Commercial landings (m lb)	3.000	3.082	2.844	2.802	2.240	1.883	1.182	1.676	1.689	1.736	NA	NA
Recreational ACL (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.860	2.90	2.90
Rec. harvest limit-adjusted (m lb)[a]	4.434	4.01	4.13	3.989	2.474	2.108	1.138	1.830	1.781	1.320	2.26	2.26
Recreational landings (m lb)	3.304	1.679	1.878	1.979	2.229	1.571	2.313	2.979	1.267	3.30[b]	NA	NA
Com. fish size (in)	11	11	11	11	11	11	11	11	11	11	11	11
Com. min. mesh size (in, diamond)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Threshold (lb)	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100
Vent size (in)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Recreational measures (minimum fish size (total length), possession limit, and open season)	12-in TL, 25 fish, 1/1-9/1 and 9/16-11/30	12-in TL, 25 fish, 1/1-9/7 and 9/22-11/30	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12.5-in TL, 25 fish, 1/1-10/5	12.5-in TL, 25 fish, 5/22-10/11 and 11/1-12/31	12.5-in TL, 25 fish, 5/22-10/11 and 11/1-12/31	12.5-in TL, 15 fish 1/1-2/28; 25 fish 5/19-10/14 and 11/1-12/31	12.5-in TL, 20 fish, 5/19-10/14 and 11/1-12/31	NA

[a]Adjusted for RSA and projected discards. [b] Includes all of North Carolina. NA=Not applicable or not yet available. [c] These reflect the regulations currently set for black sea bass in 2014, however, the Council and ASFMC will review these catch limits and management measures in October 2013 and may revise as necessary.

The ASMFC divides the black sea bass commercial quota among the states based on the allocation percentages given in Table 2, and states set measures to achieve their state-specific commercial quotas.

Table 2: The ASFMC black sea bass allocation formula for the commercial fisheries in each state.

State	Allocation (percent)
ME	0.5
NH	0.5
MA	13.0
RI	11.0
CT	1.0
NY	7.0
NJ	20.0
DE	5.0
MD	11.0
VA	20.0
NC	11.0
Totals	100

National Marine Fisheries Service statistical areas are shown in Figure 4. Vessel trip report (VTR) data suggest that statistical area 616, which includes Hudson canyon, and statistical area 621, were responsible for the largest percentage of the catch. Statistical area 537 had the majority of trips that caught black sea bass (Table 3).

Table 3: Statistical areas that accounted for at least 5 percent of the black sea bass catch in 2012, NMFS VTR data.

Statistical Area	Black Sea Bass Catch (percent)	Black Sea Bass Trips (N)
616	16.56	368
621	16.52	369
615	11.05	172
622	9.20	87
537	6.99	657

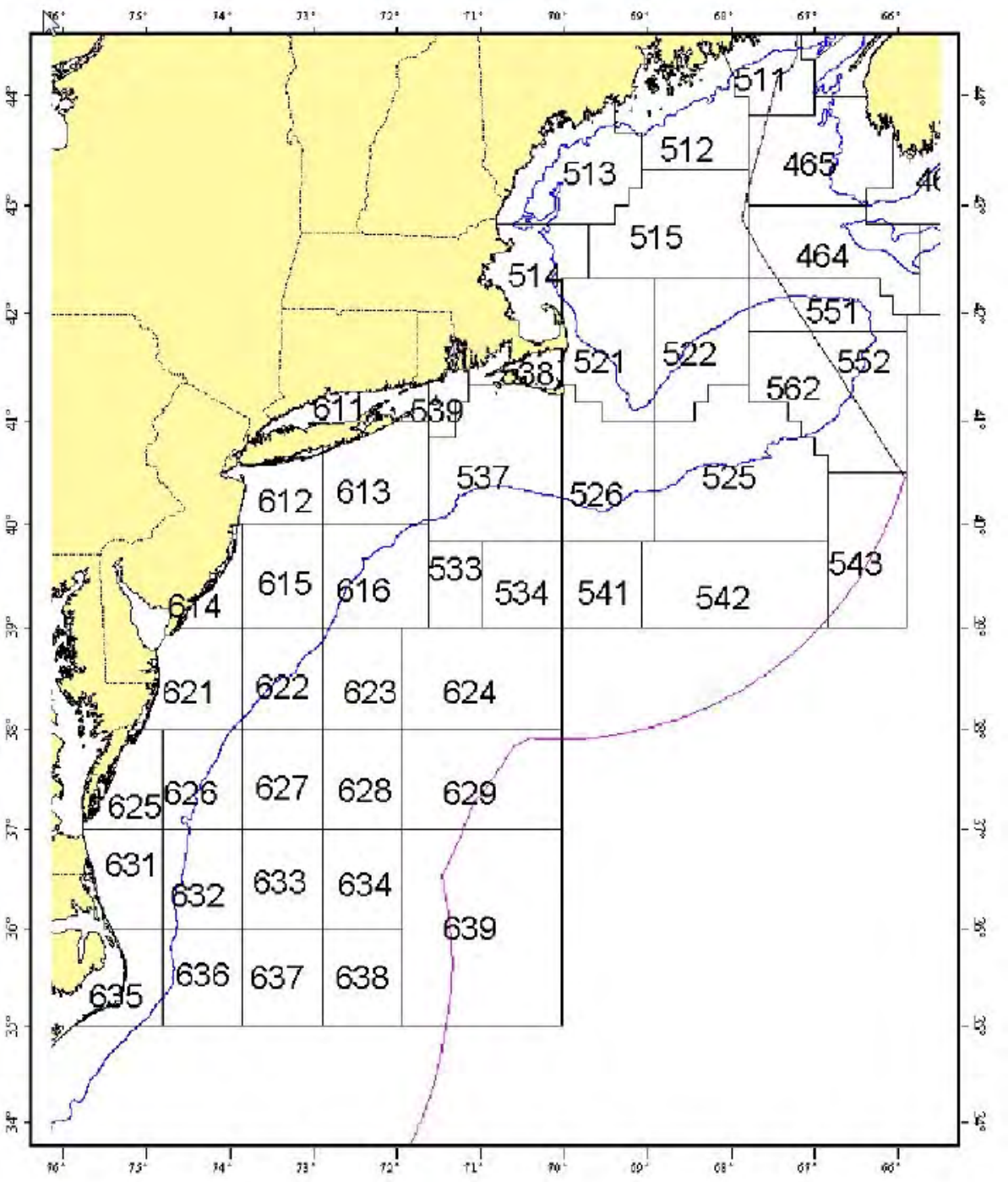

Figure 4: National Marine Fisheries Service Statistical Areas.

Based on VTR data for 2012, the majority of black sea bass landings were taken by bottom otter trawls (51 percent), followed by pots and traps (30 percent), hand lines (10 percent), and offshore lobster pots and traps (6 percent). Other gear types each accounted for less than 1 percent of landings. Current regulations state that large trawl nets are required to possess a minimum of 75 meshes of 4.5 inch diamond mesh in the codend, or

the entire net must have a minimum mesh size of 4.5 inch throughout (Table 1). The threshold level used to trigger the minimum mesh requirement size is 500 lb from January through March and 100 lb from April through December (Table 1). In addition, the minimum vent size requirements for black sea bass pots/traps are 2.5 inches for circle vents, 2 inches for square vents, or 1.375 by 5.75 inches for rectangular vents. Two vents are required in the parlor portion of the pot/trap.

Black sea bass ex-vessel revenues based on dealer data have ranged from $2.2 to $7.8 million for the 1994 through 2012 period. The mean price for black sea bass (unadjusted) has ranged from a low of $1.14/lb in 1996 to a high of $3.30/lb in 2012 (Figure 5). In 2012, 1.7 million pounds of black sea bass were landed generating $5.7 million in revenues ($3.30 lb).

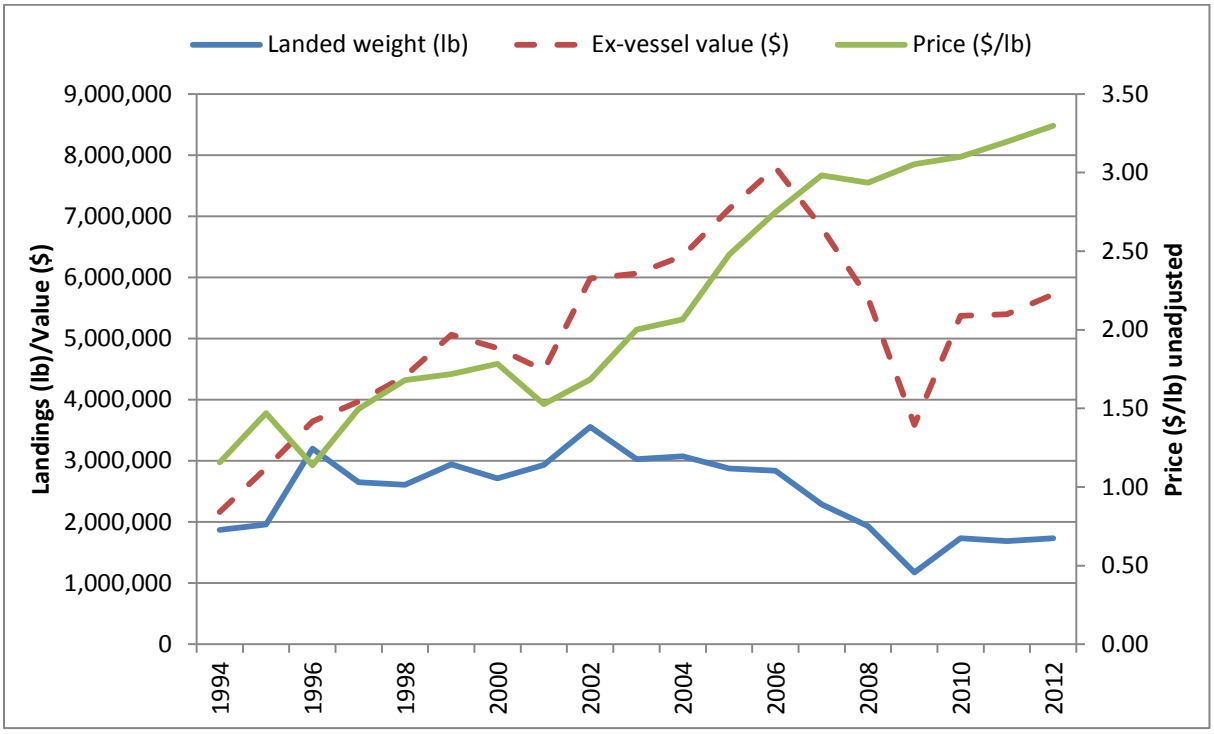

Figure 5: Landings, ex-vessel value, and price (unadjusted) for black sea bass, Maine through North Carolina, 1994-2012.

The ports and communities that are dependent on black sea bass are fully described in Amendment 13 to the FMP. Additional information on "Community Profiles for the Northeast US Fisheries" can be found at:
http://www.nefsc.noaa.gov/read/socialsci/community_profiles/

2012 NMFS dealer data were used to examine recent landings patterns among ports. The top commercial landings ports for black sea bass by pounds landed are shown in Table 4. A “top port” is defined as any port that landed at least 100,000 lb of black sea bass.

Table 4: Top ports of landing (in lb) for black sea bass (BSB), based on NMFS 2012 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	Landings of BSB (lb)	# BSB Vessels
PT. PLEASANT, NJ	187,731	42
HAMPTON, VA	154,533	26
PT. JUDITH, RI	145,500	121
OCEAN CITY, MD	140,861	17
CHINCOTEAGUE, VA	104,377	16

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (43) who bought black sea bass in 2012 (Table 5). All dealers bought approximately $5.7 million of black sea bass in 2012.

Table 5: Dealers reporting buying black sea bass, by state in 2012.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Other
	37	36	10	43	27	3	6	15	18	0

Recreational Fishery

There is a significant recreational fishery for black sea bass in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. In Federal waters, the recreational black sea bass fishery is managed on a coastwide basis. State waters are also managed on a coastwide basis, with the exception of the last three years (i.e., 2011, 2012, 2013) when an ASMFC Addendum was developed to enable state-specific measures to be implemented. The 2013 recreational fishing measures in Federal waters are given in Table 1, and the 2013 state-specific measures are given in Table 6.

Table 6: Black sea bass recreational fishing measures in 2013, by state.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts (Private and For-hire)	14	4 fish	May 11- October 31
Massachusetts (For-hire with Letter of Authorization from MA DMF)	14	10 fish	May 11- June 14
		20 fish	July 1- August 11 September 1- October 10
Rhode Island	13	3 fish	June 15- August 31
		7 fish	September 1- December 31
Connecticut (Private and Shore)	13	3 fish	June 15- August 31
		8 fish	September 1- October 29
For-hire*		8 fish	June 15-November 30
New York	13	8 fish	July 10- December 31
New Jersey	12.5	20 fish	May 19- August 8; September 27- October 14; November 1- December 31
Delaware	12.5	15 fish	January 1- February 28
		20 fish	May 19 - October 14 and November 1 - December 31
Maryland	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
PRFC	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
Virginia	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
North Carolina (North of Cape Hatterass 35° 15'N Latitude)	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31

*Party/Charter Vessels enrolled In Monitoring Program

Recreational data have been available through the Marine Recreational Information Program (MRIP) since 2004, and prior to 2004 were available through the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational catch and landings peaked in 1986 with landings in numbers and weight at the lowest levels in 2011 (Table 7). When anglers are intercepted through the surveys conducted for the recreational statistics

programs, they are asked about where the majority of their fish were caught (i.e., inland, state waters (<=3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of black sea bass are landed recreationally, and indicate that a majority of the landings are now occurring in state waters (Table 8).

Table 7: Recreational black sea bass landings and data from the NMFS recreational statistics databases, 1981-2012.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	5,301	2,734	1,628
1982	11,615	10,249	10,054
1983	8,707	5,631	4,530
1984	4,330	2,491	1,961
1985	7,131	4,216	2,540
1986	29,167	21,904	12,461
1987	5,912	3,467	2,392
1988	9,363	4,060	3,945
1989	7,000	4,649	3,621
1990	9,622	4,269	3,047
1991	11,224	5,458	4,316
1992	8,296	3,869	2,914
1993	9,451	6,197	4,985
1994	7,688	3,571	3,054
1995	14,481	6,887	6,339
1996	8,437	3,764	4,125
1997	11,088	4,868	4,399
1998	5,699	1,259	1,290
1999	7,758	1,412	1,697
2000	17,667	3,755	4,122
2001	14,626	3,006	3,596
2002	15,080	3,421	4,442
2003	12,649	3,392	3,449
2004	8,884	1,925	2,307
2005	8,358	1,489	2,188
2006	8,729	1,392	1,886
2007	9,601	1,630	2,347
2008	11,102	1,342	2,094
2009	9,875	1,909	2,595
2010	11,133	2,335	3,286
2011	5,794	881	1,267
2012	14,553	1,946	3,302

Table 8: Percentage of black sea bass recreational landings (MRIP Type A+B1 in number of fish) by area (state vs. Federal waters), Maine through North Carolina, 2003-2012. Area information is self-reported based on the area where the majority of fishing activity occurred per angler trip.

Year	State <= 3 mi	EEZ > 3 mi
2003	22.1	77.9
2004	25.6	74.4
2005	29.9	70.1
2006	34.9	65.1
2007	34.8	65.2
2008	60.3	39.7
2009	67.5	32.5
2010	72.1	27.9
2011	63.8	36.2
2012	72.6	27.4
Avg. 2003 - 2012	48.4	51.6
Avg. 2010 - 2012	69.5	30.5

Table 9: State contribution (as a percentage) to total recreational landings of black sea bass, (MRIP Type A+B1 in number of fish), from Maine through North Carolina, 2010 and 2011.

State	2011	2012
Maine	0.0	0.0
New Hampshire	0.0	0.2
Massachusetts	22.1	26.7
Rhode Island	5.7	5.3
Connecticut	1.0	5.7
New York	31.2	16.5
New Jersey	16.9	37.8
Delaware	4.9	2.1
Maryland	5.4	1.7
Virginia	2.2	0.2
North Carolina	10.8	3.9
Total	**100%**	**100%**

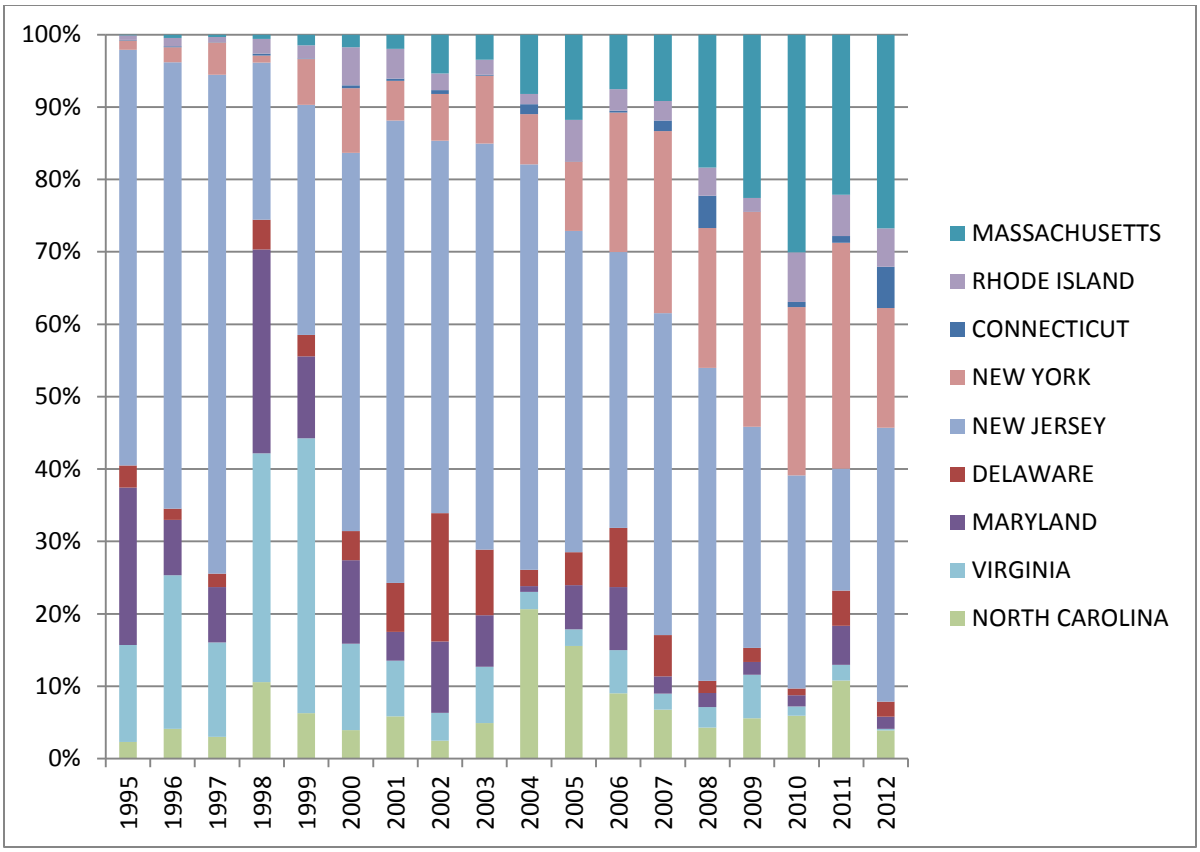

Figure 6: State contribution (as a percentage) of total recreational landings of black sea bass (MRIP Type A + B1 in number of fish), from Massachusetts through North Carolina, 1995-2012.

The states of Massachusetts, New Jersey, and New York land the majority of fish (Table 9; Figure 6). Since the mid-1990s, the state contributions of landings (in numbers of fish) have shifted somewhat, with Massachusetts and New York landing an increasing percentage (Figure 6).

In 2012, there were 808 recreational vessels (i.e., party and charter vessels) that held black sea bass Federal recreational permits. Many of these vessels also hold recreational permits for summer flounder and scup. Landings by mode indicate that although party/charter fishermen have historically been responsible for the majority of black sea bass landings, the private/rental fishery has accounted for the majority of landings in recent years (Table 10).

Table 10: The number of black sea bass landed from Maine through North Carolina by mode, 1981-2012.

Year	Shore	Party/Charter	Private/Rental
1981	452,101	1,440,171	841,480
1982	81,445	8,104,204	2,063,332
1983	222,011	4,005,707	1,403,508
1984	98,228	1,128,294	1,264,894
1985	163,447	2,393,048	1,659,703
1986	1,021,524	16,695,386	4,187,088
1987	71,956	1,157,244	2,238,164
1988	140,754	1,691,300	2,227,901
1989	237,968	1,991,670	2,419,649
1990	289,379	2,268,914	1,710,458
1991	250,675	2,586,149	2,621,274
1992	45,368	2,043,188	1,780,226
1993	54,675	4,579,665	1,562,229
1994	243,347	2,005,887	1,321,627
1995	275,982	5,197,229	1,413,571
1996	70,522	2,631,735	1,062,026
1997	8,337	3,950,335	908,840
1998	7,073	777,874	474,071
1999	19,231	621,355	771,259
2000	177,489	1,797,695	1,780,239
2001	14,034	1,826,851	1,164,977
2002	16,618	2,066,232	1,338,447
2003	10,760	2,073,130	1,308,496
2004	9,462	698,456	1,217,163
2005	13,110	605,934	869,466
2006	49,081	730,749	612,622
2007	9,865	909,873	709,905
2008	9,447	479,680	852,622
2009	23,992	442,106	1,442,842
2010	6,096	519,527	1,809,044
2011	8,177	310,764	561,727
2012	6,443	701,777	1,237,668
% of total, 1981 - 2012	3%	61%	36%
% of total, 2008 - 2012	1%	29%	70%

The NMFS angler expenditure survey summarizes a variety of costs associated with recreational fishing in the Northeast (Table 11). In addition, Steinback et al., 2009 summarized the reasons for fishing, with a majority of anglers (about 85 percent) fishing either mostly or fully for recreational purposes (Table 12).

Table 11: Average daily trip expenditures ($ unadjusted) by recreational fishermen in the Northeast region by mode, in 2006. Source: Gentner and Steinback (2008)

Expenditures	$		
	Party/Charter	Private/Rental	Shore
Private transportation	13.88	11.03	12.94
Public transportation	0.26	0.07	0.40
Auto rental	0.27	0.02	0.10
Food from grocery stores	7.40	4.92	7.33
Food from restaurants	8.70	3.42	9.28
Lodging	10.0	2.64	14.90
Boat fuel	0	9.54	0
Boat or equipment rental	0.05	0.19	0.03
Charter fees	57.76	0	0
Charter crew tips	3.0	0	0
Catch processing	0.02	0	0
Access and parking	0.44	1.11	1.32
Bait	0.31	3.42	3.25
Ice	0.39	0.59	0.39
Tackle used on trip	1.87	2.04	3.98
Tournament fees	1.10	0.04	0.02
Gifts and souvenirs	1.67	0.10	1.45
Total	107.13	39.14	55.39

Table 12: Purpose of Marine Recreational Fishing in the Northeast**.** Source: Steinback et al., 2009.

	Percent	Number of anglers in 2005 (thousands)
All for food or income	2.1	92.4
Mostly for food or income	<1.0	34.3
Both for recreation and for food or income	11.7	514.8
Mostly for recreation	13.2	580.8
All for recreation	72.2	3,176.8

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