



**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:** July 31, 2012

**TO:** Council

**FROM:** Jessica Coakley and Kiley Dancy, Staff

**SUBJECT:** Scup Management Measures for 2013, 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) Report of the July Meeting of the Council's Science and Statistical Committee  
(See Summer Flounder Briefing Book Tab)
- 3) Staff Recommendation Memo
- 4) Scup Minimum Fish Size and Mesh Size Background Memo
- 5) Stock Assessment of Scup for 2012
- 6) Stock Assessment Projections
- 7) Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports  
(See Summer Flounder Briefing Book Tab)
- 8) Scup Advisory Panel Information Document



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Christopher M. Moore, Ph.D., Executive Director

## MEMORANDUM

**DATE:** July 20, 2012

**TO:** Chris Moore, Executive Director

**FROM:** Jessica Coakley and Kiley Dancy, Staff

**SUBJECT:** Scup Management Measures for 2013, 2014, 2015

### Executive Summary

Based on the July 2012 assessment update, the scup stock is not overfished and overfishing is not occurring. The ASAP model estimated spawning stock biomass (SSB) was 420.0 million lb (190,424 mt) in 2011 (207% of the biomass at maximum sustainable yield,  $SSB_{MSY}$ ). Staff recommends scup specifications be set for 3 years (2013, 2014, 2015), and that the acceptable biological catch (ABC) and associated catch limits be held constant for that period. Based on updated projections for scup and the Council risk policy on overfishing a "typical" stock, the staff recommendation for ABC is 38.71 million lb (17,557 mt) for 2013, 2014, and 2015. The staff recommend a commercial ACL and recreational ACL of 30.19 mil lb (13,694 mt) and 8.52 mil lb (3,863 mt), respectively. Staff also recommend a commercial annual catch target (ACT) of 30.19 million lb (13,694 mt), a commercial quota less 3% research set-aside (RSA) of 23.53 million lb (10,671 mt), a recreational ACT of 7.24 million lb (3,283 mt), and a recreational harvest limit less 3% RSA of 6.42 million lb (2,911 mt), for 2013, 2014, and 2015. Staff do not recommend any change to the current minimum fish size (9 inch-TL), gear requirements, possession limits, or gear restricted areas (GRAs). 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, among other things, 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 fishery management plan (FMP) established Monitoring Committees which develop recommendations for management measures designed to achieve the recommended catch limits. The SSC will recommend an ABC for scup that addresses scientific uncertainty and the Monitoring Committee will focus on recommending measures to address management uncertainty (ACTs). 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 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 2013, 2014, and 2015 fishery 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 the assessment update, the 2011, commercial and recreational landings were 15.03 million lb (6,817 mt) and 3.66 million lb (1,660 mt), respectively. The 2012 commercial landings as of the week ending July 14, 2012, indicate that 23% of the summer period quota has been landed (Table 1).

**Table 1. The 2012 scup summer period quota and the amount of scup landed by commercial fishermen in the summer period, in each state as of week ending July 14, 2012.**

State	Commercial Summer Period			Research
	Cumulative Landings (lb) <sup>a</sup>	2012 Summer Quota (lb) <sup>b</sup>	Percent of Quota (%)	Set-Aside Landings (lb) <sup>a</sup>
ME	0			0
NH	0			0
MA	586,045			747
RI	945,752			0
CT	129,905			3,463
NY	785,785			134,810
NJ	6,503			0
DE	1			0
MD	0			0
VA	543			0
NC	0			0
Other	0			0
<b>Totals</b>	<b>2,454,534</b>	<b>10,870,390</b>	<b>23</b>	<b>139,020</b>

<sup>a</sup> Quotas adjusted for research set-aside and overages. Source: NMFS Weekly Quota Report for week ending July 14, 2012.

### **Regulatory Review**

In October of 2011, after the Council had taken action to recommend scup specifications for 2012, a new scup stock assessment update became available from the Northeast Fisheries Science Center. Given this new information, the SSC and the Monitoring Committee were asked to reconsider their recommendations for 2012. While the biological reference points remained unchanged, the overfishing limit was reduced by 24% to 50.48 million lbs (22,897 mt). This was based on the 2011 projected  $B/B_{msy} > 1$ , Council risk policy  $P^* = 0.4$ , and a lognormal distribution with of  $CV = 100\%$ . The associated 2012 commercial quota was 27.91 million lb (12,660 mt) and the recreational harvest limit was 8.45 million lb (3,833 mt).

At the July 2011 meeting, the SSC considered scup to be a level 3 assessment (based on the control rules in the proposed Omnibus Amendment), and considered the following to be the most significant sources of uncertainty: although older age scup (age 3+) are represented in the catch used in the assessment model, ages 3+ are not represented in the survey data that were used as input to the model; commercial discard estimates are imprecise and represent a considerable portion of the total catch; 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 points; the assessment does not contain a characterization of uncertainty for the OFL and other biological reference points; recruitment appears high in recent years, but it is unclear how these recent high levels would compare to historical levels of recruitment; survey indices are particularly sensitive to scup availability, which results in high inter-annual variability; 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, 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.

### **Biological Reference Points**

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) = 202.9 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 101.5 million lb (46,022 mt).

### **Stock Status and Projections**

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 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). Projections indicate that if the stock is fished at the fishing mortality threshold of  $F_{MSY} = F_{40\%}$  (as  $F_{MSY}$  proxy) = 0.177 in 2013, median landings are projected to be 39.641 million lb (17,981 mt), with median discards of 8.203 million lb (3,721 mt), and median total catch 47.796 million lb (21.680 mt). This projected median total catch is equivalent to the Overfishing Limit (OFL) for 2013, and is greater than the MSY of 35.629 million lb (16,161 mt).

### **Basis for 2013, 2014, and 2015 ABC Recommendation**

Input through the Council's Visioning process and Fishery Performance Reports prepared by the Advisory Panel highlight stakeholder interest in having stable fishery management measures; therefore, staff recommends scup specifications be set for 3 years, 2013, 2014, and 2015. Staff recommends that the 2013 ABC be applied to 2014 and 2015 as well. A 3-year constant catch (ABC) approach should provide a more conservative and stable method for setting multi-year ABCs, when compared to setting increasing or decreasing ABCs over the period in response to changes in projected F and SSB.

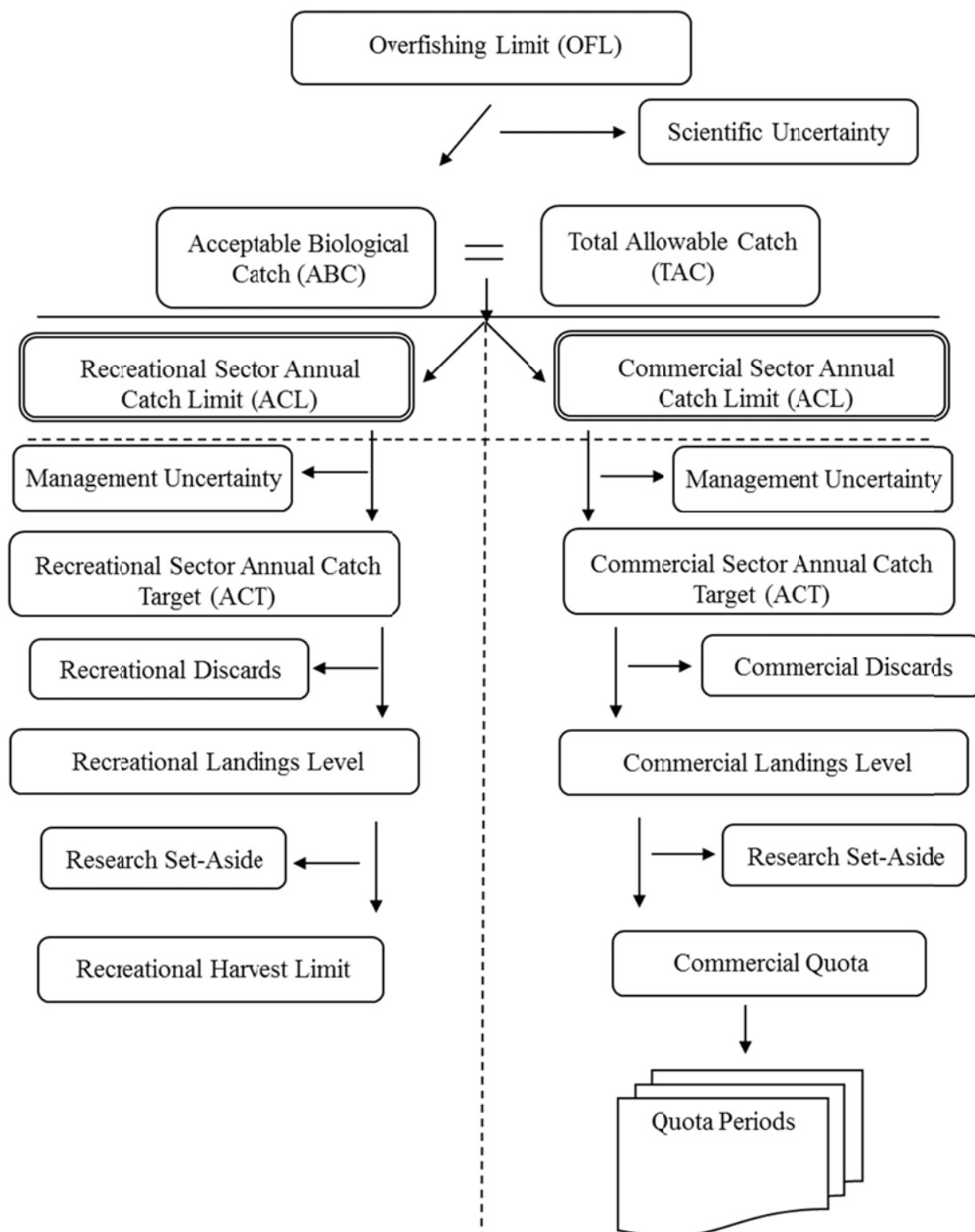
The recommended OFL for 2013 of 47.796 million lb (21.680 mt) is defined by the fishing mortality threshold of  $F=0.177$  and projected biomass in 2013 (432.0 million lb, 196,236 mt; 212% of  $SSB_{MSY}$ ). It is clear that recommendations for ABC, which would equal the OFL, would not account for any scientific uncertainty associated with estimation of OFL and the assessment of the scup stock. Last year, the SSC classified the scup 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 2013 ABC, and that the same ABC be utilized for 2014 and 2015. Based on the 2012 projected  $SSB/SSB_{MSY} = 212\%$ , Council risk policy  $P^* = 0.4$ , and a lognormal distribution with of  $CV = 100\%$ , the staff recommend an ABC of 38.71 million lb (17,557 mt) for 2013, 2014, and 2015 (Table 2). This ABC is about 81% of the OFL. Based on projections at this ABC for 2013, the stock is expected to continue to grow to a 2013 SSB of 482.8 million lb (219,000 mt) with a 2013  $F=0.142$ . Applying this same ABC to 2014 and 2015 would not be expected to result in overfishing of the stock given the current stock conditions.

### **Other Management Measures**

#### ***Recreational and Commercial ACLs***

In the Omnibus Amendment,  $ABC=TAC$  and the sum of the commercial and recreational ACL equals the ABC (Figure 1).

## Scup Flowchart



**Figure 1. Scup catch and landings limits.**

An ABC of 38.71 million lb (17,557 mt) is 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 are 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.

**Table 2. Allocation of the scup ABC to the commercial and recreational ACLs for 2013, 2014, and 2015 (Staff recommended).**

	<b>Catch (Landings + Discards)</b>	<b>Landings Portion</b>	<b>Discards Portion</b>
<b>ABC</b>	38.71 mil lb (17,577 mt)	32.04 mil lb (14,532 mt)	6.67 mil lb (3,025 mt)
<b>Recreational ACL</b>	8.52 mil lb (3,863 mt)	7.78 mil lb (3,531 mt)	0.73 mil lb (332 mt)
<b>Commercial ACL</b>	30.19 mil lb (13,694 mt)	24.25 mil lb (11,001 mt)	5.94 mil lb (2,693 mt)

### *Considerations for ACTs*

As described in the Omnibus Amendment, the Scup Monitoring Committee will be responsible for recommending ACTs for the Council to consider. The relationship between the recreational and commercial ACTs, and other catch components (current and proposed) are given in Figure 1. The Committee may provide other recommendations relevant to setting catch limits consistent with the MSA. The Monitoring Committee can 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, and sources of management uncertainty would be described and provided to the Council for consideration. 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 (Table 3). The proportional standard error on coastwide scup recreational catch (based on MRIP) is 15%. Because this serves as an indicator of the variability of the data, staff recommend an 15% reduction in catch from the recreational ACL to address potential imprecision in observed catch estimates relative to the catch target for 2013. This would result in a recreational ACT of 7.24 million lb (3,283 mt). 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. Scup commercial and recreational fishery performance relative to quotas and harvest limits, 2007-2011.**

<b>Year</b>	<b>Commercial Landings (mil lb)</b>	<b>Commercial Quota (mil lb)</b>	<b>Percent Overage(+)/ Underage(-)</b>	<b>Recreational Landings (mil lb)</b>	<b>Recreational Harvest Limit (mil lb)</b>	<b>Percent Overage(+)/ Underage(-)</b>
<b>2007</b>	9.25	8.90	+4%	4.60	2.74	+67%
<b>2008</b>	5.18	5.24	-1%	3.76	1.83	+105%
<b>2009</b>	8.19	8.37	-2%	3.23	2.59	+14%
<b>2010</b>	10.70	10.68	0%	5.99	3.01	+91%
<b>2011</b>	15.03	20.36	-26%	3.60	5.74	-36%
<b>5-yr Avg.</b>	-	-	-5%	-	-	+67%

### ***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) will be equal to overall TAL (Table 2). Based on the staff recommended ACTs given above and a recommended 3% research set-aside deduction, the commercial quota is 23.53 million lb (10,671 mt) and the recreational harvest limit is 6.42 million lb (2,911 mt).

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 period quotas based on the staff recommended commercial quota, would be 10.61 million lb (4,814 mt) for Winter I, 9.16 million lb (4,156 mt) for Summer, and 3.75 million lb (1,701 mt) for Winter II.

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 2013 will not be determined until after the first four waves of 2012 recreational landings are reviewed. These data will be available in October 2012. The Monitoring Committee will meet in November 2012 to review these landings data and make recommendations regarding changes in the recreational management measures (i.e., possession limit, minimum size, and season). The Committee may also meet in November 2013 and 2014 to recommend adjustments to recreational measures for the 2014 and 2015 fishing years. 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.

### ***Possession Limits***

The Winter I possession limit for 2012 is 50,000 lb, until 80 percent of the landings are reached, at which point the possession limit drops to 1,000 lb. This was 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, as well as Winter I for 2012. These data indicate that the overall number of trips taken in Winter I of 2012 increased relative to 2011. The increase is primarily in trips landing less than 500 lb of scup. 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 2011. 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.

### ***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.

Industry members have argued that the minimum fish size should be reduced to 8 inch-TL. Staff is 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 the monitoring committee did not recommend any changes based on this information. 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. GRAs became effective on November 1, 2000 for the northern area with an exemption for herring fishery. The GRAs were modified in size in late 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. Based on recommendations from the Monitoring Committee, the boundary of the southern GRA was moved 3 longitudinal minutes to the west in 2005. No modifications were made to the GRAs in 2006 through 2012. As stated in Amendment 10 to the Squid, Mackerel, Butterfish FMP, “During 1997-2000, the *Loligo* fishery was responsible for the following discards in terms of the percentage of all Northeast Fishery Observer Program (NEFOP) discards: butterfish- 56%, **scup- 78%**, silver hake- 69%, red hake- 48%, spiny dogfish- 12% and little skates- 3%. More recently (and since implementation of the Scup GRAs) during 2001-2006, the *Loligo* fishery was responsible for the following discards in terms of the percentage of all NEFOP Discards: butterfish- 68% , **scup- 8%** , silver hake- 56% , red hake- 31% , spiny dogfish- 10% and little skates- less than 1%.” Therefore, staff recommend no changes in the GRAs.

### ***Pots and Traps Escape Vents***

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. A Council and Commission sponsored workshop in 2005 which reviewed several vent size studies did not make any recommendations for changes in vent size as they relate to scup. Therefore, staff recommend no changes to escape vent size requirements in scup pots.

## MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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## M E M O R A N D U M

**DATE:** 7/19/05

**TO:** Chris Moore

**FROM:** Jessica Coakley

**SUBJECT:** Scup minimum fish and mesh size - commercial

Industry members have asked that the minimum size for scup should be reduced from 9 inches to 8 inches TL in 2006. They argue that such a reduction would improve market conditions and reduce discards. The following is a review of information available to the Monitoring Committee to evaluate this request for a drop in the minimum size and determine if it is appropriate given the current status of the stock.

### *Data available*

**Maturity:** Scup median length at maturity for females and males is 15.5 cm FL (6.78 in TL; n=284) and 15.6 cm FL (6.83 in TL; n=232), respectively based on observations of gonads from the Northeast Fisheries Science Center spring bottom trawl surveys, 1985 and 1987 to 1990 (O'Brien et al. 1993; Figure 1). Observations reported in FL were converted to TL using Hamer (1979) in MAFMC (1996). Because scup size at maturity is similar for both sexes, these data were used to fit an "average" maturity ogive for both sexes (Figure 2). Based on examination of this average maturity ogive, about 50% of the fish are mature at 6.8 inches TL, 90.6% of scup are mature at 8 inches TL, and 98.5% are mature at 9 inches TL. Therefore lowering the minimum size from 9 inches to 8 inches TL would result in landings with a larger percentage of immature fish.

**Length of Discards:** Information on the length frequency distribution of discarded scup are limited. Data were provided by Rutgers University (Sarah King pers. comm.) for four tows conducted in 2001 using 5 inch codend mesh (current mesh size requirement). These data were also highlighted in a recent paper in Fisheries Bulletin (Bochenek et al. 2005). These data indicate a peak in discard lengths around 8 inches under the 5 inch codend mesh requirement (Figure 3). Bochenek et al. (2005) compared the length frequency for discards of scup in their study to the 2001 NMFS observer discard length frequency and found they were similar. The mean discard length in the Rutgers study was 17.7 cm (6.9 in) with a range of 13.2 to 21.4 cm (5.2 to 8.4 in), and the NMFS observer mean discard length was 17.2 cm (6.8 in) with a range of 13.6 to 20.6 cm (5.35 to 8.1 in). Expanded length-frequencies for discards provided by the NEFSC for 2003 also indicate a peak in length-frequency of fish slightly less than 9 inches in half-year 2 (Figure 4; Terceiro pers. comm.).

**Mesh Selectivity:** Data on mesh selectivity are also quite limited. However, a study by Dealeris and Reifsteck (1992) did determine that 4.7 inch codend square and diamond meshes have an L(50) of about

22 cm (8.66 inches TL ). This study was conducted in the field in Naragansett Bay, RI and measured scup were released into a towed net. Using this information to calculate a selectivity factor of 1.84, an L(50) for 5 inch codend mesh would be about 23.4 cm (9.2 inches TL) and an L(50) for 5.5 inch mesh would be about 25.9 cm (10.18 inches TL). By examining the shape of the curve, L(25) would be about 8.3 inches TL (21cm) at 5.0 inches codend mesh and about 9.1 inches TL (23 cm) at 5.5 inches codend mesh.

<b>SF=1.84</b>	<b>L 50% (TL)</b>	<b>L 25% (TL)</b>
<b>4.7 inch mesh</b>	8.66 in	≈ 7.5 in
<b>5.0 inch mesh</b>	9.20 in	≈ 8.3 in
<b>5.5 inch mesh</b>	10.18 in	≈ 9.1 in

While their study did not find statistical difference in the L(50) between square and diamond meshes, it did find that escape time was reduced and survival greater in the square mesh. It should also be noted that all of the fish in this study were 30% below the retention size for the selectivity ogive.

Another study by Beutal et al. (2004) examined the scup mesh selectivity using a 4.5 inch diamond and 6 and 6.5 inch square codend mesh. Based on examination of Figure 3 provided in that report (Figure 5 in this memo), the following values were estimated.

	<b>L 50% (TL)</b>	<b>L 25% (TL)</b>
<b>4.5 inch diamond mesh</b>	≈ 9.65 in	≈ 7.5 in
<b>6.0 inch square mesh</b>	≈ 11.22 in	≈ 10.03 in
<b>6.5 inch square mesh</b>	≈ 10.8 in	≈ 9.65 in

### *References*

Beutal, D., L.G. Skrobe, C. Brown, and D. Borden. 2004. Characterization of bycatch reduction from codend mesh size increases in the directed scup bottom trawl fishery. URI Fisheries Center Tech. Report:01-04

Bochenek, E.A, E.N. Powell, A.J. Bonner, and S.E. Banta. 2005. An assessment of scup (*Stenotomus chrysops*) and black sea bass (*Centropristis striata*) discards in the directed otter trawl fisheries in the Mid-Atlantic Bight. *Fishery Bulletin* 103:1 pp 1-14

MAFMC. 1996. Amendment 8 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan: fishery management plan and final environmental impact statement for the scup fishery. January 1996, 353 p. Mid-Atlantic Fishery Management Council, Dover, DE

O' Brien, L., J. Burnett, and R.K. Mayo. 1993. Maturation of nineteen species of finfish off the Northeast coast of the United States, 1985-1990. NOAA Tech. Report NMFS 113 pp 32

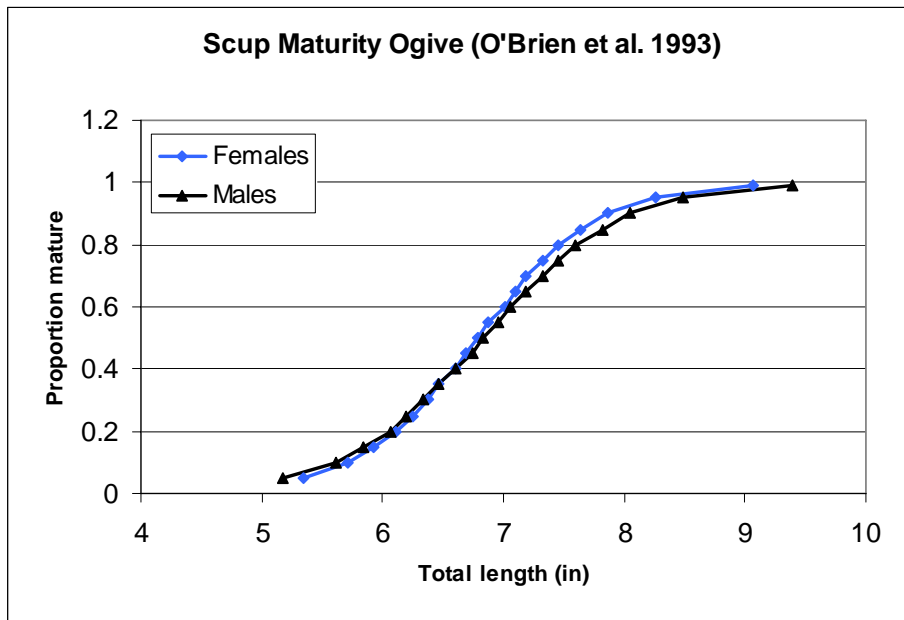


Figure 1. Scup size at maturity, as provided in O'Brien et al. (1993), converted to FL using Hamer (1979).

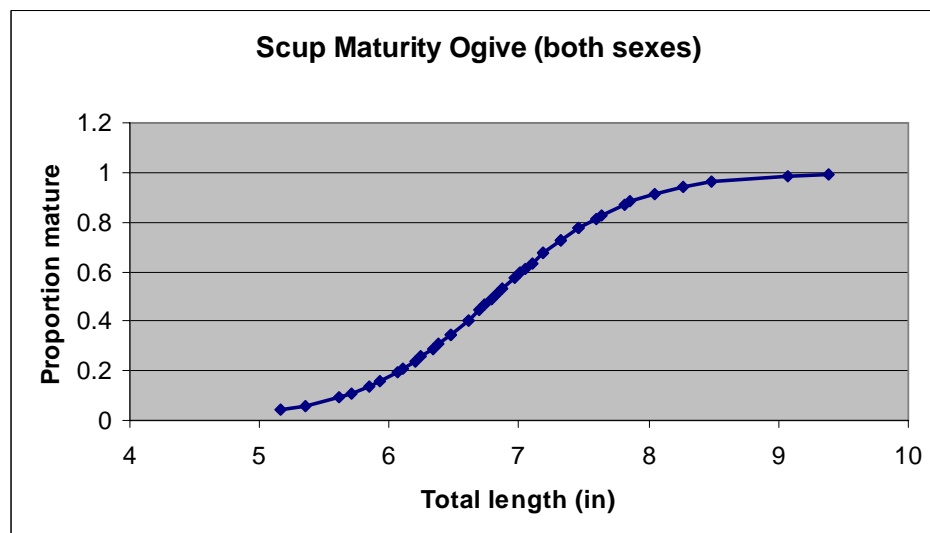
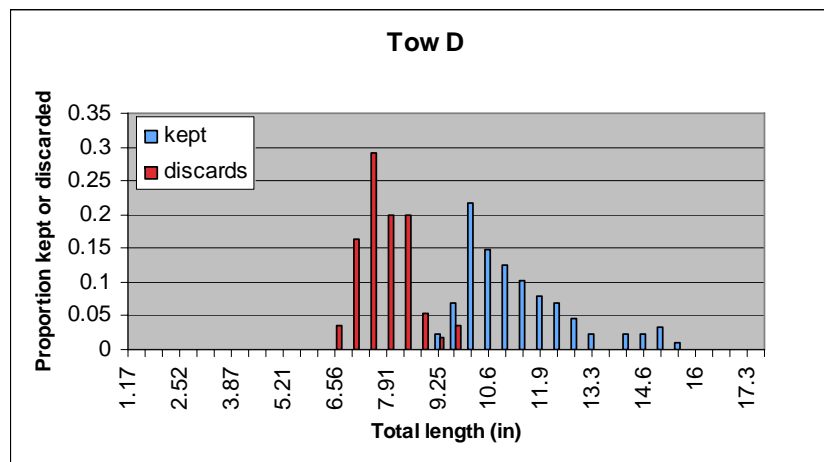
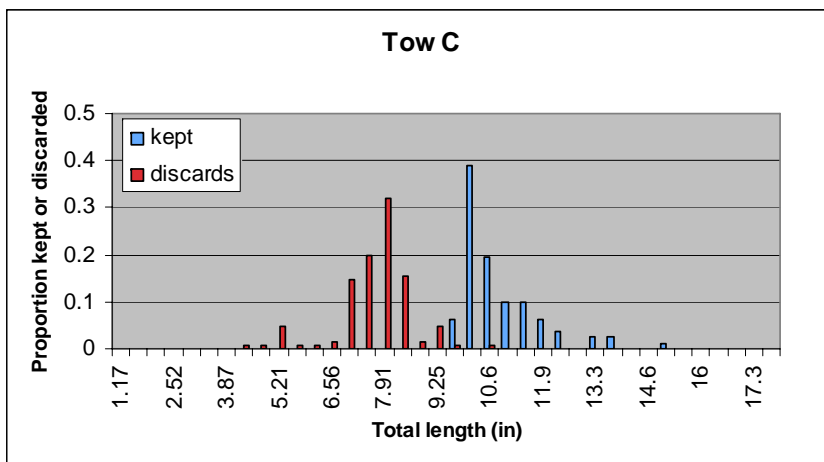
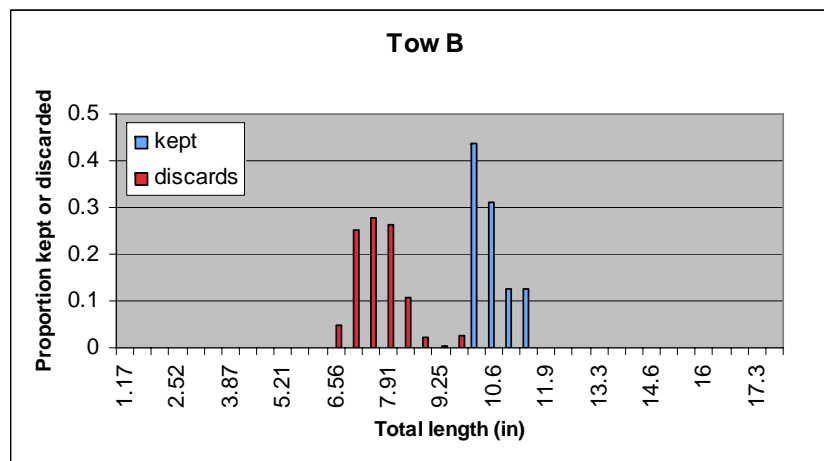
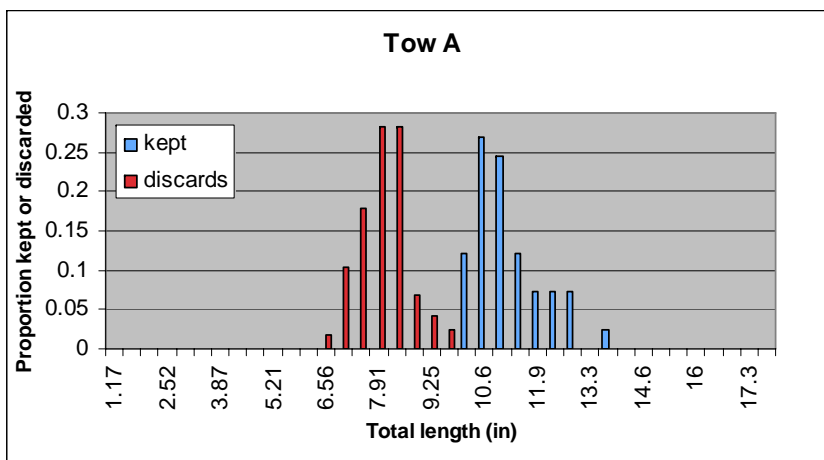
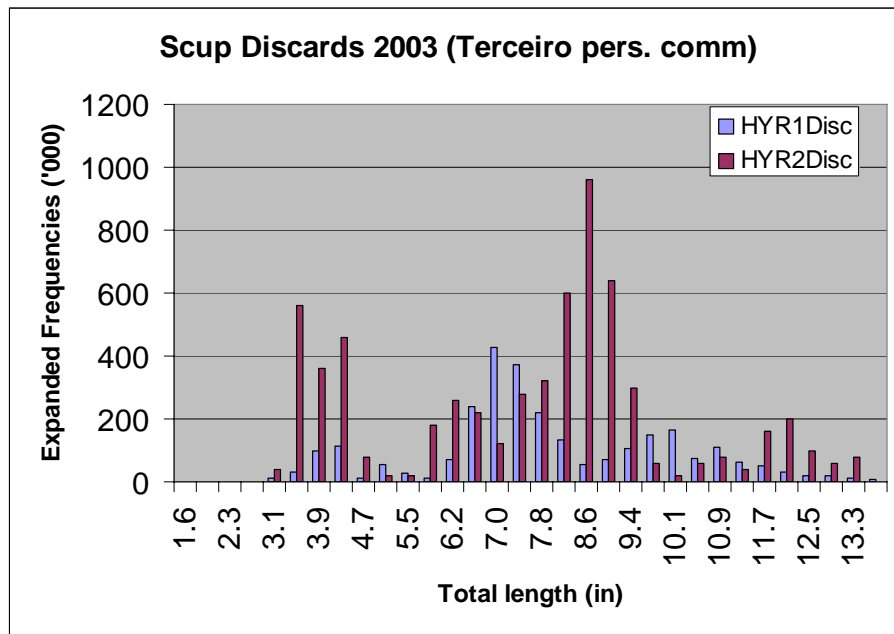


Figure 2. Scup average size at maturity for both sexes.



**Figure 3. Four survey tows conducted by Rutgers HSRL in 2001 using 5 in codend mesh (Sarah King pers. comm.).**



**Figure 4. Expanded frequencies of scup discards from observer data in 2003 (Terceiro pers. comm.).**

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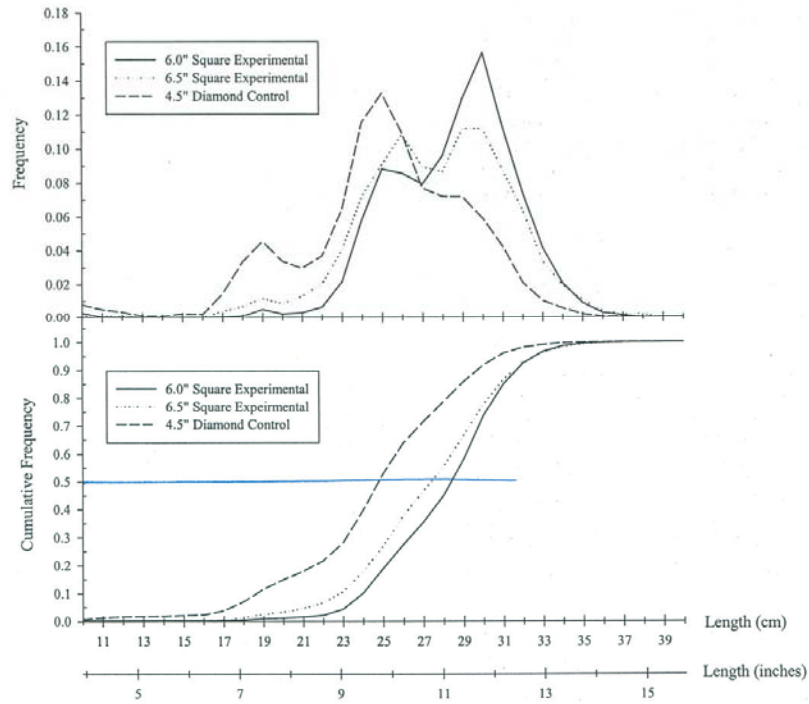


Figure 3. Length distributions of scup: (a) relative frequencies and (b) cumulative relative

Figure 5. Report figure from Beutal et al. 2004.



# Stock Assessment of Scup for 2012

By  
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## EXECUTIVE SUMMARY

This assessment of the scup (*Stenotomus chrysops*) stock along the Atlantic coast (Massachusetts to North Carolina) is an update through 2011 of commercial and recreational fishery (MRIP) catch data, research survey indices of abundance, and the analyses of those data. The stock was not overfished and overfishing was not occurring in 2011 relative to the biological reference points established in the 2008 Northeast Data Poor Stocks (DPS) assessment. The fishing mortality rate ( $F$ ) was estimated to be 0.034 in 2011, below the fishing mortality threshold reference point =  $F_{MSY}$  =  $F_{40\%}$  = 0.177. Spawning Stock Biomass (SSB) was estimated to be 190,424 metric tons (mt) = 420 million lbs in 2011, above the biomass target reference point =  $SSB_{MSY}$  =  $SSB_{40\%}$  = 92,044 mt = 203 million lbs.

Reported 2011 landings in the commercial fishery were 6,819 mt = 15.033 million lbs, about 73% of the commercial quota. Estimated 2011 landings in the recreational rod-and-reel fishery (as estimated by the MRIP) were 1,632 mt = 3.598 million lbs, about 61% of the recreational harvest limit. Total commercial and recreational landings in 2011 were 8,451 mt = 18.631 million lbs and total commercial and recreational discards were 2,086 mt = 4.599 million lbs, for a total catch in 2011 of 10,537 mt = 23.230 million lbs.

Spawning stock biomass (SSB) decreased from about 100,000 mt in 1963 to about 50,000 mt in 1969, then increased to about 75,000 mt during the late 1970s. SSB declined through the 1980s and early 1990s to less than 5,000 mt in the mid-1990s. SSB increased to above 100,000 mt = 220 million lbs since 2004 due to improved recruitment and low fishing mortality. SSB was estimated to be 190,424 mt = 420 million lbs in 2011. There is a 50% probability that SSB in 2011 was between 185,000 and 198,000 mt (408 and 436 million lbs). Fishing mortality calculated from the average of the currently fully recruited ages (2-7+) varied between  $F = 0.1$  and  $F = 0.3$  during the 1960s and 1970s. Fishing mortality increased during the 1980s and early 1990s, peaking at about  $F = 1.0$  in the mid-1990s. Fishing mortality decreased after 1994, falling to less than  $F = 0.1$  since 2001, with  $F$  in 2011 = 0.034. There is a 50% probability that  $F$  in 2011 was between 0.026 and 0.042.

Recruitment at age 0 averaged 92 million fish during 1963-1983, the period in which recruitment estimates are influenced mainly by the assessment model stock-recruitment relationship. Since 1984, recruitment estimates from the model are influenced mainly by the fishery and survey catches at age, and averaged 110 million fish during 1984-2011. The 1999, 2000, and 2008 year classes are estimated to be the largest of the time series, at 207, 226, and 215 million age 0 fish. After below average recruitment in 2009 and 2010, the 2011 year class is estimated to be above average at 154 million age 0 fish.

There is no consistent internal retrospective pattern in F, SSB, or recruitment evident in the 2012 updated assessment model. A between-assessment comparison provides another measure of assessment uncertainty due to changes in model estimates. The 2012 assessment estimates of SSB and F are intermediate with respect to the 2008 DPSWG assessment and 2009 update for the same years, and are very similar to those from 2010 and 2011 updates. The 2012 assessment estimates of the size of the 2007 through 2010 year classes are in general larger compared to the 2011 assessment.

If the landings of scup in 2012 equal the specified Total Allowable Landings (TAL) = 16,749 mt = 36.925 million lbs, the 2012 median (50% probability) discards are projected to be 3,334 mt = 7.350 million lbs, and the median total catch is projected to be 20,083 mt = 44.275 million lbs. The median F in 2012 is projected to be 0.158, below the fishing mortality threshold = FMSY = F40% = 0.177. The median SSB on June 1, 2012 is projected to be 203,982 mt = 450 million lbs, above the biomass target of SSBMSY = SSB40% = 92,044 mt = 203 million lbs.

If the stock is fished at the fishing mortality threshold = FMSY = F40% = 0.177 in 2013, median landings are projected to be 17,981 mt = 39.641 million lbs, with median discards of 3,721 mt = 8.203 million lbs, and median total catch = 21,680 mt = 47.796 million lbs. This projected median total catch is equivalent to the Overfishing Limit (OFL) for 2013, and is greater than MSY = 16,161 mt (35.629 million lbs) of total catch (13,134 mt = 28.956 million lbs of landings plus 3,027 mt = 6.673 million lbs of discards). The median SSB on June 1, 2013 is projected to be 196,236 mt = 432 million lbs, above the biomass target of SSBMSY = SSB40% = 92,044 mt = 203 million lbs. The projected catch estimates in the following table are medians of the catch distributions for fixed F in 2013.

Total Catch (OFL), Landings, Discards, Fishing Mortality (F)  
and Spawning Stock Biomass (SSB) in 2013  
Catches and SSB in metric tons

Total Catch	Landings	Discards	F	SSB
21,680	17,981	3,721	0.177	196,236

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Scup 2012 Assessment Update: 2013 ABC

Date &amp; Time of Run: 19 Jul 2012 11:56

Input File Name: H:\NFTDATA\SCUP\ASAP\S2012\MRIP\PRO\_2012\_ABC2013.IN

First Age Class: 1  
 Number of Age Classes: 8  
 Number of Years in Projection: 6  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 100

Bootstrap File Name: C:\NFTSCUP\MRIP\BUILD\_2012\_MRIP\_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	16749
2013	Removals	17557
2014	F-Mult	0.1770
2015	F-Mult	0.1770
2016	F-Mult	0.1770
2017	F-Mult	0.1770

Recruits 1000 Fish

Year	Class	Average	StdDev
2012		109451.8785	51433.7976
2013		109216.2849	51489.7861
2014		109094.1599	51535.2054
2015		109355.7157	51436.3284
2016		109293.9840	51408.9553
2017		109026.3099	51407.2851

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012		26656.7200	38564.5100	44044.3600	72375.0600	100796.4000	146254.3000	191168.5000	212329.9000	222999.5000
2013		26822.7900	38445.6000	43989.2100	71047.1000	100715.8000	146210.3000	190884.4000	212239.4000	222842.0000
2014		26707.7400	38259.3800	43889.3300	70276.2800	100522.3000	146144.7000	190755.4000	212183.0000	222906.5000
2015		26724.5400	38546.1400	44006.9500	72079.4500	100654.5000	146248.6000	191086.4000	212370.5000	222942.5000

PRO\_2012\_ABC2013.out

2016	26703.0700	38378.9300	44015.1400	71775.6300	100740.5500	146236.0000	190876.6000	212053.4000	222789.7000
2017	26655.4500	38253.8200	43927.1900	70749.5300	100489.7500	146123.2000	190285.7000	212139.9000	222703.4000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2012	203.2934	10.8938
2013	197.4341	11.2110
2014	187.0880	10.9089
2015	172.6985	10.1726
2016	156.7504	10.2257
2017	144.4074	10.9600

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	175.1044	183.5479	188.5340	196.7008	203.9816	210.4040	216.5805	220.5295	225.9589
2013	169.8756	177.3697	183.1590	190.4932	197.9042	205.0016	211.5283	215.8489	221.3265
2014	161.6805	168.5806	173.3873	180.1718	186.9590	194.3250	201.3488	205.0360	211.8716
2015	149.2633	156.1822	159.8459	165.9661	172.5444	179.4188	185.9546	189.6300	196.2560
2016	133.8749	140.4790	143.8826	149.7185	156.4889	163.5924	170.1012	173.9847	181.1500
2017	120.6629	127.0827	130.5548	136.7251	144.0648	151.7540	158.7642	163.0526	170.9247

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	225.4173	11.4917
2013	218.5910	11.8538
2014	209.4144	12.0734
2015	195.4769	11.5184
2016	177.7334	11.2776
2017	163.8012	11.8562

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	196.7368	204.6861	209.9935	218.3185	226.0656	233.0851	239.0337	243.6258	249.1165
2013	189.6377	197.7279	203.3753	211.1361	219.1509	226.5981	233.3392	237.8037	244.0576
2014	181.0147	189.1172	194.0483	201.7338	209.5199	217.3502	224.9857	229.1847	236.7058
2015	168.6616	176.7422	180.8971	187.8576	195.3392	203.1451	210.3637	214.6924	222.2863
2016	152.2469	159.6454	163.5234	170.0148	177.4893	185.2997	192.3333	196.7066	204.5075
2017	137.8826	144.9718	148.8030	155.5385	163.4528	171.7548	179.3283	183.8924	192.3835

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	219.7948	11.5281
2013	211.9962	11.8405

PRO\_2012\_ABC2013.out

2014	200.0034	11.5895
2015	185.0510	11.3767
2016	169.2645	11.5887
2017	157.1624	12.3375

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	190.6044	199.0867	204.7787	212.8570	220.5380	227.5300	233.6373	238.5834	243.8775
2013	183.7249	191.5326	196.8600	204.4813	212.3259	219.8436	227.0139	231.2804	238.2343
2014	172.8524	180.9015	185.2467	192.4750	199.9812	207.6721	214.9846	219.0842	226.5047
2015	158.8866	166.7257	170.6940	177.3794	184.8557	192.6570	199.7480	204.1078	211.8454
2016	143.6322	150.7609	154.6101	161.2308	168.9516	177.0190	184.3356	188.8413	197.0795
2017	130.5978	137.6022	141.5150	148.5106	156.7674	165.4036	173.3636	178.1557	187.0609

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2012	20.1000	0.1831
2013	17.5570	0.0000
2014	20.1581	1.1464
2015	18.5889	1.3247
2016	17.1133	1.3697
2017	15.9733	1.4487

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	19.7176	19.8036	19.8769	19.9794	20.0833	20.2152	20.3447	20.4218	20.5621
2013	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570
2014	17.5124	18.2847	18.7063	19.4074	20.1488	20.9147	21.6569	22.0579	22.7998
2015	15.7175	16.5109	16.9351	17.6647	18.5300	19.4751	20.3437	20.8614	21.7689
2016	14.1917	14.9688	15.3927	16.1430	17.0564	18.0325	18.9240	19.4581	20.4478
2017	12.9478	13.7021	14.1498	14.9436	15.9099	16.9423	17.8931	18.4580	19.5137

Landings x 1000 MT

Year	Average	StdDev
2012	16.7490	0.0000
2013	14.5247	0.1692
2014	16.8641	0.9751
2015	15.3950	0.9283
2016	14.0335	0.9413
2017	12.9694	1.0302

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
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2012	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490
2013	14.1111	14.2384	14.3006	14.4168	14.5323	14.6403	14.7318	14.7890	14.9028
2014	14.6091	15.2345	15.6447	16.2501	16.8437	17.5184	18.1444	18.4918	19.0827
2015	13.2704	13.8997	14.2299	14.7715	15.3774	16.0118	16.6032	16.9515	17.5678
2016	11.9394	12.5402	12.8478	13.3808	14.0089	14.6630	15.2664	15.6225	16.2861
2017	10.7581	11.3446	11.6674	12.2437	12.9350	13.6585	14.3195	14.7272	15.4694

Discards x 1000 MT

Year	Average	StdDev
2012	3.3510	0.1831
2013	3.0323	0.1692
2014	3.2940	0.3370
2015	3.1938	0.6097
2016	3.0799	0.6225
2017	3.0039	0.6247

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	2.9686	3.0546	3.1279	3.2304	3.3343	3.4662	3.5957	3.6728	3.8131
2013	2.6542	2.7680	2.8252	2.9166	3.0247	3.1402	3.2564	3.3186	3.4458
2014	2.6549	2.7957	2.8823	3.0482	3.2555	3.5127	3.7827	3.9127	4.1019
2015	2.0526	2.2897	2.4432	2.7432	3.1248	3.6020	4.0531	4.2850	4.7170
2016	1.8956	2.1438	2.3115	2.6229	3.0162	3.4951	3.9470	4.1962	4.6247
2017	1.8144	2.0687	2.2353	2.5427	2.9440	3.4199	3.8753	4.1190	4.5515

Total Fishing Mortality

Year	Average	StdDev
2012	0.1587	0.0088
2013	0.1423	0.0083
2014	0.1770	0.0000
2015	0.1770	0.0000
2016	0.1770	0.0000
2017	0.1770	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.1418	0.1456	0.1482	0.1528	0.1578	0.1635	0.1705	0.1749	0.1831
2013	0.1250	0.1296	0.1317	0.1367	0.1419	0.1473	0.1529	0.1564	0.1632
2014	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2015	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2016	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2017	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770

Probability Spawning Stock Biomass Exceeds Threshold 92.044 (1000 MT)

PRO\_2012\_ABC2013.out

Year	Probability
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2012	1.000000
2013	1.000000
2014	1.000000
2015	1.000000
2016	1.000000
2017	1.000000

Probability Threshold Exceeded at Least Once = 1.0000

Probability Total Fishing Mortality Exceeds Threshold 0.1770

Year	Probability
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2012	0.033000
2013	0.002000
2014	0.000000
2015	0.000000
2016	0.000000
2017	0.000000

Probability Threshold Exceeded at Least Once = 0.0330

AGEPRO VERSION 4.2

Scup 2012 Assessment Update: 2013 ABC

Date &amp; Time of Run: 26 Jul 2012 08:50

Input File Name: C:\NFTSCUP\ASAP\S2012\MRIP\PRO\_2012\_ABC2013\_CONSTANTF.INP

First Age Class: 1  
 Number of Age Classes: 8  
 Number of Years in Projection: 6  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 100

Bootstrap File Name: C:\NFTSCUP\ASAP\S2012\MRIP\BUILD\_2012\_MRIP\_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	16749
2013	Removals	17557
2014	F-Mult	0.1420
2015	F-Mult	0.1420
2016	F-Mult	0.1420
2017	F-Mult	0.1420

Recruits 1000 Fish

Year	Class	Average	StdDev
2012		109451.8785	51433.7976
2013		109216.2849	51489.7861
2014		109094.1599	51535.2054
2015		109355.7157	51436.3284
2016		109293.9840	51408.9553
2017		109026.3099	51407.2851

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012		26656.7200	38564.5100	44044.3600	72375.0600	100796.4000	146254.3000	191168.5000	212329.9000	222999.5000
2013		26822.7900	38445.6000	43989.2100	71047.1000	100715.8000	146210.3000	190884.4000	212239.4000	222842.0000
2014		26707.7400	38259.3800	43889.3300	70276.2800	100522.3000	146144.7000	190755.4000	212183.0000	222906.5000
2015		26724.5400	38546.1400	44006.9500	72079.4500	100654.5000	146248.6000	191086.4000	212370.5000	222942.5000



PRO\_2012\_ABC2013\_CONSTANTF.out

2016	26703.0700	38378.9300	44015.1400	71775.6300	100740.5500	146236.0000	190876.6000	212053.4000	222789.7000
2017	26655.4500	38253.8200	43927.1900	70749.5300	100489.7500	146123.2000	190285.7000	212139.9000	222703.4000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2012	203.2934	10.8938
2013	197.4341	11.2110
2014	188.6557	10.9988
2015	177.7534	10.4707
2016	164.6513	10.7696
2017	154.6387	11.7723

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	175.1044	183.5479	188.5340	196.7008	203.9816	210.4040	216.5805	220.5295	225.9589
2013	169.8756	177.3697	183.1590	190.4932	197.9042	205.0016	211.5283	215.8489	221.3265
2014	163.0431	170.0013	174.8427	181.6821	188.5243	195.9547	203.0393	206.7501	213.6513
2015	153.6359	160.7555	164.5224	170.8196	177.5956	184.6694	191.3979	195.1854	201.9986
2016	140.5837	147.5342	151.0930	157.2358	164.3725	171.8559	178.7176	182.8244	190.3762
2017	129.1718	136.0444	139.7635	146.3797	154.2538	162.5180	170.0769	174.6796	183.1299

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	225.4173	11.4917
2013	218.5910	11.8538
2014	209.4144	12.0734
2015	199.4167	11.7444
2016	184.8662	11.7396
2017	173.5319	12.5757

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	196.7368	204.6861	209.9935	218.3185	226.0656	233.0851	239.0337	243.6258	249.1165
2013	189.6377	197.7279	203.3753	211.1361	219.1509	226.5981	233.3392	237.8037	244.0576
2014	181.0147	189.1172	194.0483	201.7338	209.5199	217.3502	224.9857	229.1847	236.7058
2015	172.0677	180.3215	184.5548	191.6487	199.2770	207.2387	214.6042	219.0102	226.7508
2016	158.3736	166.0471	170.0860	176.8250	184.6036	192.7393	200.0719	204.6330	212.7350
2017	146.0878	153.5718	157.6296	164.7657	173.1625	181.9628	189.9881	194.8501	203.8221

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	219.7948	11.5281
2013	211.9962	11.8405

PRO\_2012\_ABC2013\_CONSTANTF.out

2014	201.9227	11.6983
2015	190.5716	11.7172
2016	177.6612	12.1747
2017	167.8921	13.1815

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	190.6044	199.0867	204.7787	212.8570	220.5380	227.5300	233.6373	238.5834	243.8775
2013	183.7249	191.5326	196.8600	204.4813	212.3259	219.8436	227.0139	231.2804	238.2343
2014	174.5231	182.6440	187.0304	194.3251	201.9002	209.6634	217.0460	221.1850	228.6778
2015	163.6322	171.7102	175.7841	182.6641	190.3734	198.4061	205.7124	210.2141	218.1601
2016	150.7385	158.2226	162.2750	169.2196	177.3315	185.7986	193.5000	198.2442	206.8850
2017	139.5067	147.0241	151.1957	158.6435	167.4593	176.7117	185.2071	190.3386	199.8142

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2012	20.1000	0.1831
2013	17.5570	0.0000
2014	16.3329	0.9285
2015	15.3694	1.0972
2016	14.4190	1.1540
2017	13.6887	1.2366

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	19.7176	19.8036	19.8769	19.9794	20.0833	20.2152	20.3447	20.4218	20.5621
2013	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570	17.5570
2014	14.1906	14.8155	15.1569	15.7248	16.3252	16.9456	17.5469	17.8717	18.4735
2015	12.9940	13.6491	14.0005	14.6032	15.3199	16.1035	16.8237	17.2531	18.0051
2016	11.9570	12.6128	12.9702	13.6010	14.3720	15.1932	15.9446	16.3949	17.2312
2017	11.1044	11.7490	12.1305	12.8096	13.6356	14.5169	15.3267	15.8094	16.7084

Landings x 1000 MT

Year	Average	StdDev
2012	16.7490	0.0000
2013	14.5247	0.1692
2014	13.6601	0.7897
2015	12.7301	0.7679
2016	11.8445	0.7962
2017	11.1611	0.8889

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
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PRO\_2012\_ABC2013\_CONSTANTF.out

2012	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490
2013	14.1111	14.2384	14.3006	14.4168	14.5323	14.6403	14.7318	14.7890	14.9028
2014	11.8343	12.3405	12.6724	13.1628	13.6433	14.1900	14.6973	14.9783	15.4574
2015	10.9741	11.4936	11.7666	12.2142	12.7152	13.2406	13.7302	14.0179	14.5281
2016	10.0755	10.5825	10.8418	11.2926	11.8231	12.3775	12.8865	13.1892	13.7495
2017	9.2567	9.7613	10.0382	10.5346	11.1308	11.7558	12.3274	12.6780	13.3203

Discards x 1000 MT

Year	Average	StdDev
2012	3.3510	0.1831
2013	3.0323	0.1692
2014	2.6728	0.2729
2015	2.6393	0.5047
2016	2.5745	0.5192
2017	2.5277	0.5216

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	2.9686	3.0546	3.1279	3.2304	3.3343	3.4662	3.5957	3.6728	3.8131
2013	2.6542	2.7680	2.8252	2.9166	3.0247	3.1402	3.2564	3.3186	3.4458
2014	2.1551	2.2693	2.3394	2.4738	2.6418	2.8500	3.0686	3.1739	3.3273
2015	1.6966	1.8912	2.0182	2.2666	2.5816	2.9764	3.3527	3.5436	3.8981
2016	1.5871	1.7936	1.9336	2.1935	2.5210	2.9201	3.2995	3.5068	3.8599
2017	1.5343	1.7475	1.8864	2.1425	2.4771	2.8746	3.2566	3.4609	3.8175

Total Fishing Mortality

Year	Average	StdDev
2012	0.1587	0.0088
2013	0.1423	0.0083
2014	0.1420	0.0000
2015	0.1420	0.0000
2016	0.1420	0.0000
2017	0.1420	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.1418	0.1456	0.1482	0.1528	0.1578	0.1635	0.1705	0.1749	0.1831
2013	0.1250	0.1296	0.1317	0.1367	0.1419	0.1473	0.1529	0.1564	0.1632
2014	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420
2015	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420
2016	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420
2017	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420	0.1420

Probability Spawning Stock Biomass Exceeds Threshold 92.044 (1000 MT)

PRO\_2012\_ABC2013\_CONSTANTF.out

Year	Probability
------	-------------

2012	1.000000
2013	1.000000
2014	1.000000
2015	1.000000
2016	1.000000
2017	1.000000

Probability Threshold Exceeded at Least Once = 1.0000

Probability Total Fishing Mortality Exceeds Threshold 0.1770

Year	Probability
------	-------------

2012	0.033000
2013	0.002000
2014	0.000000
2015	0.000000
2016	0.000000
2017	0.000000

Probability Threshold Exceeded at Least Once = 0.0330

AGEPRO VERSION 4.2

Scup 2012 Assessment Update: 2013 = FMSY = 0.177

Date &amp; Time of Run: 17 Jul 2012 08:37

Input File Name: H:\NFTDATA\SCUP\ASAP\S2012\MRIP\PRO\_2012\_FMSY.IN

First Age Class: 1  
 Number of Age Classes: 8  
 Number of Years in Projection: 6  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 100

Bootstrap File Name: C:\NFTSCUP\MRIP\BUILD\_2012\_MRIP\_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	16749
2013	F-Mult	0.1770
2014	F-Mult	0.1770
2015	F-Mult	0.1770
2016	F-Mult	0.1770
2017	F-Mult	0.1770

Recruits 1000 Fish

Year	Class	Average	StdDev
2012		109451.8785	51433.7976
2013		109216.2849	51489.7861
2014		109094.1599	51535.2054
2015		109355.7157	51436.3284
2016		109293.9840	51408.9553
2017		109026.3099	51407.2851

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012		26656.7200	38564.5100	44044.3600	72375.0600	100796.4000	146254.3000	191168.5000	212329.9000	222999.5000
2013		26822.7900	38445.6000	43989.2100	71047.1000	100715.8000	146210.3000	190884.4000	212239.4000	222842.0000
2014		26707.7400	38259.3800	43889.3300	70276.2800	100522.3000	146144.7000	190755.4000	212183.0000	222906.5000
2015		26724.5400	38546.1400	44006.9500	72079.4500	100654.5000	146248.6000	191086.4000	212370.5000	222942.5000

PRO\_2012\_FMSY.out

2016	26703.0700	38378.9300	44015.1400	71775.6300	100740.5500	146236.0000	190876.6000	212053.4000	222789.7000
2017	26655.4500	38253.8200	43927.1900	70749.5300	100489.7500	146123.2000	190285.7000	212139.9000	222703.4000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2012	203.2934	10.8938
2013	195.7520	10.7410
2014	183.1558	9.7811
2015	169.0977	9.1833
2016	153.6536	9.5067
2017	141.7941	10.4766

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	175.1044	183.5479	188.5340	196.7008	203.9816	210.4040	216.5805	220.5295	225.9589
2013	169.2511	176.4007	182.0144	189.1609	196.2360	202.9969	209.2836	213.3125	218.7092
2014	160.2825	166.4549	170.8942	176.9794	183.0466	189.6602	195.8624	199.2965	205.1558
2015	147.9302	154.2024	157.5147	162.9999	168.9688	175.1730	181.0647	184.3776	190.4323
2016	132.5547	138.5673	141.6967	147.0627	153.3888	160.0188	166.0829	169.7275	176.4602
2017	119.2802	125.3001	128.5566	134.3995	141.4302	148.8059	155.5942	159.6670	167.2424

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	225.4173	11.4917
2013	218.5910	11.8538
2014	205.1434	10.8703
2015	191.5583	10.4786
2016	174.3562	10.5075
2017	160.9389	11.3249

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	196.7368	204.6861	209.9935	218.3185	226.0656	233.0851	239.0337	243.6258	249.1165
2013	189.6377	197.7279	203.3753	211.1361	219.1509	226.5981	233.3392	237.8037	244.0576
2014	179.4654	186.8587	191.3064	198.2087	205.2363	212.3085	219.1194	222.9230	229.6499
2015	167.1394	174.5478	178.3103	184.6077	191.4184	198.5455	205.0925	209.0421	216.0185
2016	150.8157	157.5221	161.0832	167.1280	174.1144	181.4111	188.0000	192.0884	199.3809
2017	136.4182	142.9884	146.6080	152.9998	160.5515	168.5330	175.7838	180.1849	188.2526

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	219.7948	11.5281
2013	209.9203	11.2538

PRO\_2012\_FMSY.out

2014	195.9266	10.4614
2015	181.4144	10.4773
2016	166.1697	10.9575
2017	154.5584	11.9113

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	190.6044	199.0867	204.7787	212.8570	220.5380	227.5300	233.6373	238.5834	243.8775
2013	182.9511	190.4534	195.5322	202.7749	210.2388	217.3867	224.1743	228.2424	234.8268
2014	171.3369	178.7001	182.5716	189.1176	195.9145	202.8610	209.4140	213.1442	219.8238
2015	157.5522	164.5625	168.1910	174.3035	181.2283	188.4247	194.9859	198.9755	206.1536
2016	142.1458	148.7380	152.3231	158.5549	165.8424	173.5100	180.5000	184.7489	192.5952
2017	129.1546	135.7192	139.4783	146.1700	154.1453	162.5274	170.2486	174.8859	183.4798

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2012	20.1000	0.1831
2013	21.6857	1.1879
2014	19.7402	1.0298
2015	18.2271	1.2466
2016	16.8114	1.3187
2017	15.7219	1.4147

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	19.7176	19.8036	19.8769	19.9794	20.0833	20.2152	20.3447	20.4218	20.5621
2013	18.9672	19.7439	20.1794	20.9208	21.6795	22.4663	23.2796	23.6394	24.4721
2014	17.3569	18.0583	18.4356	19.0662	19.7316	20.4178	21.0815	21.4496	22.1159
2015	15.5639	16.2785	16.6744	17.3513	18.1641	19.0595	19.8944	20.3841	21.2269
2016	14.0273	14.7542	15.1571	15.8731	16.7491	17.6965	18.5633	19.0783	20.0335
2017	12.7846	13.5127	13.9415	14.7144	15.6557	16.6690	17.5987	18.1530	19.1864

Landings x 1000 MT

Year	Average	StdDev
2012	16.7490	0.0000
2013	17.9467	0.9812
2014	16.5080	0.8733
2015	15.0711	0.8409
2016	13.7537	0.8773
2017	12.7346	0.9882

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
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	PRO_2012_FMSY.out								
2012	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490	16.7490
2013	15.5168	16.2026	16.7314	17.3467	17.9807	18.5866	19.1805	19.5559	20.0258
2014	14.4663	15.0253	15.4183	15.9532	16.4960	17.0917	17.6492	17.9552	18.4908
2015	13.1537	13.7177	14.0161	14.5037	15.0537	15.6322	16.1661	16.4827	17.0505
2016	11.8186	12.3626	12.6491	13.1427	13.7280	14.3390	14.9036	15.2338	15.8650
2017	10.6329	11.1838	11.4863	12.0343	12.6990	13.3941	14.0368	14.4242	15.1487

Discards x 1000 MT

Year	Average	StdDev
2012	3.3510	0.1831
2013	3.7390	0.3082
2014	3.2322	0.3276
2015	3.1560	0.6046
2016	3.0577	0.6217
2017	2.9872	0.6243

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	2.9686	3.0546	3.1279	3.2304	3.3343	3.4662	3.5957	3.6728	3.8131
2013	3.0505	3.2546	3.3614	3.5342	3.7212	3.9361	4.1425	4.2755	4.5199
2014	2.6206	2.7507	2.8324	2.9921	3.1923	3.4436	3.7135	3.8385	4.0130
2015	2.0249	2.2594	2.4114	2.7089	3.0873	3.5611	4.0077	4.2376	4.6666
2016	1.8753	2.1231	2.2905	2.6019	2.9939	3.4718	3.9243	4.1721	4.6004
2017	1.7984	2.0533	2.2188	2.5263	2.9275	3.4028	3.8577	4.1016	4.5344

Total Fishing Mortality

Year	Average	StdDev
2012	0.1587	0.0088
2013	0.1770	0.0000
2014	0.1770	0.0000
2015	0.1770	0.0000
2016	0.1770	0.0000
2017	0.1770	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.1418	0.1456	0.1482	0.1528	0.1578	0.1635	0.1705	0.1749	0.1831
2013	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2014	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2015	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2016	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770
2017	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770	0.1770

Probability Spawning Stock Biomass Exceeds Threshold 92.044 (1000 MT)



PRO\_2012\_FMSY.out

Year	Probability
------	-------------

2012	1.000000
2013	1.000000
2014	1.000000
2015	1.000000
2016	1.000000
2017	1.000000

Probability Threshold Exceeded at Least Once = 1.0000

Probability Total Fishing Mortality Exceeds Threshold 0.1770

Year	Probability
------	-------------

2012	0.033000
2013	0.000000
2014	0.000000
2015	0.000000
2016	0.000000
2017	0.000000

Probability Threshold Exceeded at Least Once = 0.0330

## **Mid-Atlantic Fishery Management Council**

### **Scup AP Information Document<sup>1</sup> - June 2012**

#### **Management System**

The Fishery Management Plan (FMP) for scup became effective in 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. Scup was 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/fmp/fmp.htm>

#### **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. Scup eggs and newly hatched larvae are found in open water in bays and sounds of Southern New England during the spring and summer. Juvenile and adult scup are demersal, using inshore waters in the spring and moving offshore in the winter. EFH 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

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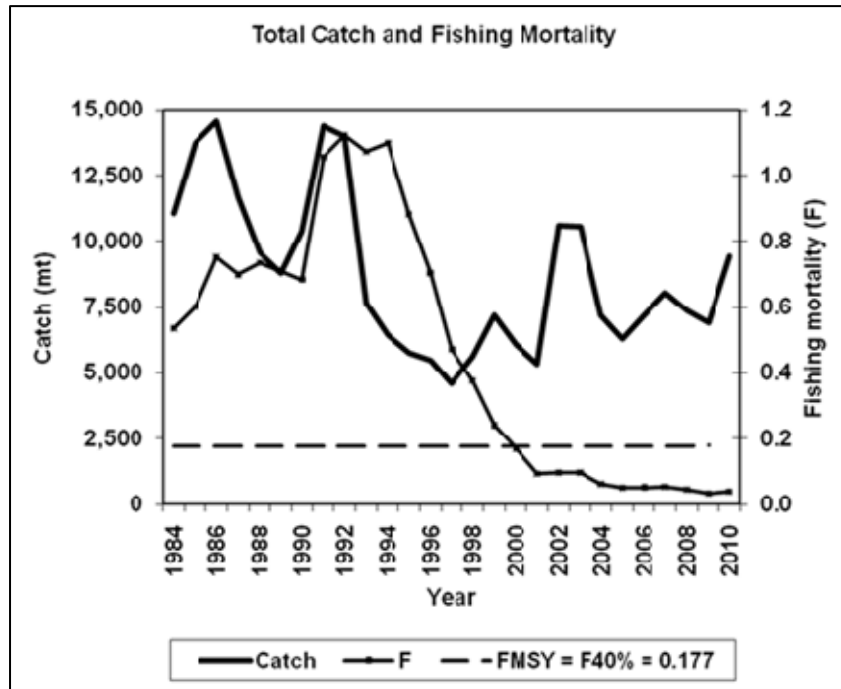
<sup>1</sup> Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of June 2012, unless otherwise noted.

are mature (NEFSC 2009). Scup reach a maximum age of at least 14 years, with a likely maximum of 20 years (NEFSC 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.

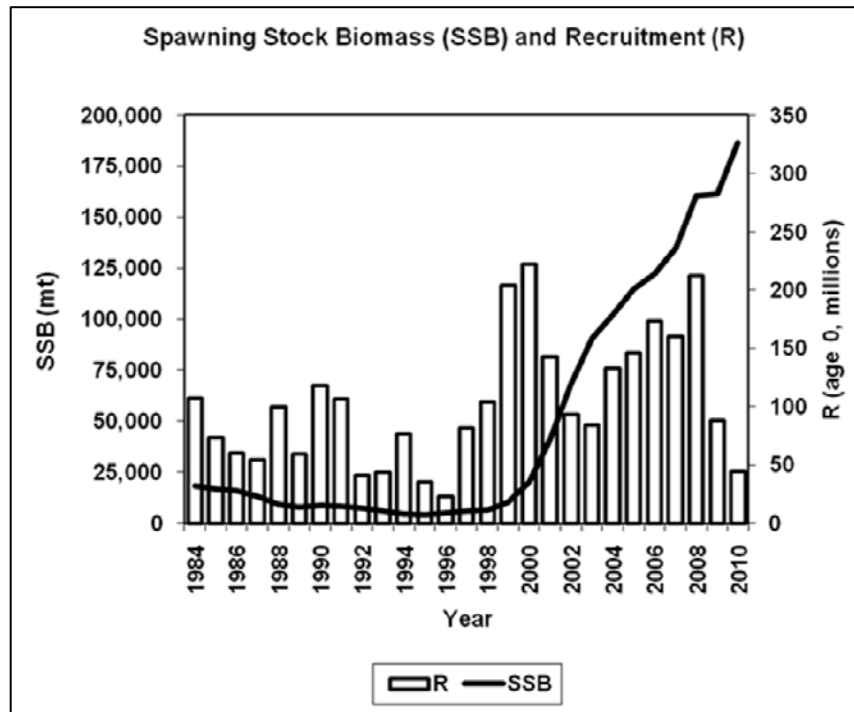
### **Status of the Stock**

A statistical catch at age model (age-structured assessment program; ASAP) model was used in the most recent peer-reviewed and accepted scup assessment (NEFSC 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>

Based on the June 2011 update, The scup stock was not overfished and overfishing was not occurring in 2010 relative to the biological reference points established in the 2008 DPSWG assessment. The fishing mortality rate ( $F$ ) was estimated to be 0.040 in 2010, below the fishing mortality threshold reference point =  $F_{MSY} = F_{40\%} = 0.177$ . Spawning Stock Biomass (SSB) was estimated to be 186,262 metric tons (mt; 411 million lb) in 2010, above the biomass target reference point =  $SSB_{MSY} = SSB_{40\%} = 92,044$  mt (203 million lb). The 2010 year class is estimated to be well below average at 44 million age 0 fish.



**Figure 1. Total fishery catch and fishing mortality rate for scup.  $F_{40\%}$  is the proxy for  $F_{MSY}$ . Source: Terceiro 2011.**

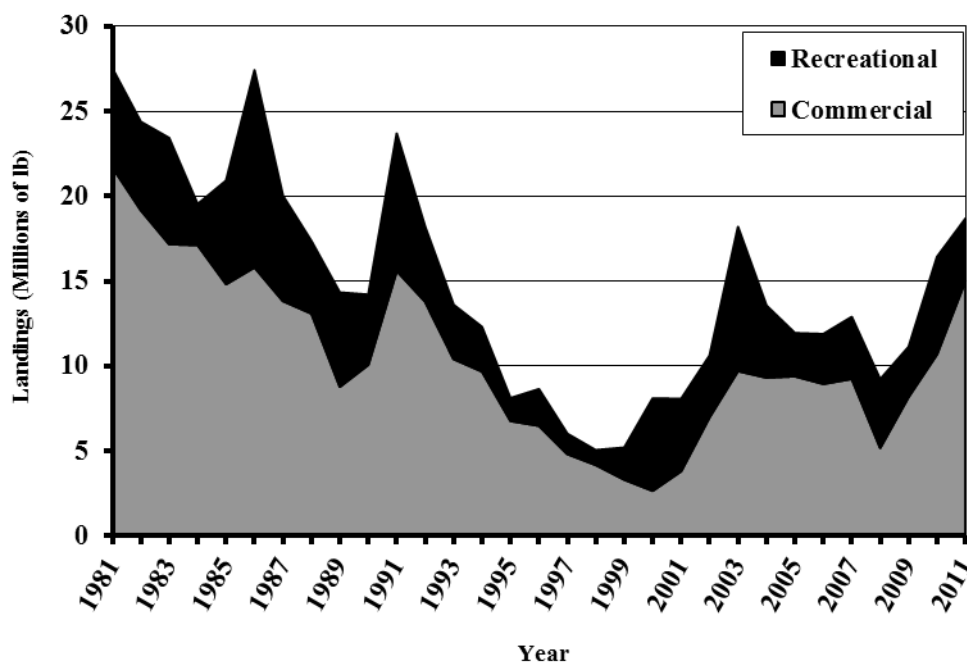


**Figure 2. Spawning Stock Biomass (SSB) and Recruitment (R, age 0) by calendar year. Source: Terceiro 2011.**  
**Fishery Performance**

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 allocated to the recreational fishery as a recreational harvest limit. The commercial quota is divided into three periods. These are 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 for 2011 indicate that 761 vessels held commercial permits for scup. Total (commercial and recreational) landings peaked in 1981 at over 27 million lb, and in 2011 were about 19 million lb total (Figure 3).



**Figure 3. Commercial and Recreational U.S. Scup Landings (Pounds) from Maine-North Carolina, 1981-2011.**

Table 1 summarizes the scup management measures for the 2003-2012 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 2012.**

<u>Management measures</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
ABC (m lb)	NA	NA	NA	NA	NA	NA	11.70	17.09	51.70	40.88
TAC (m lb)	18.65	18.65	18.65	19.79	13.97	9.90	15.54 <sup>b</sup>	17.09	31.92	40.88
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	31.89
Com. quota-adjusted (m lb) <sup>a</sup>	12.10	12.34	12.23	11.93	8.90	5.24	8.37	10.68	20.36	27.91
Commercial landings	9.71	9.33	9.41	8.96	9.25	5.18	8.20	10.71	15.03	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.99
Rec. harvest limit-adjusted (m lb) <sup>a</sup>	4.01	4.01	3.96	4.15	2.74	1.83	2.59	3.01	5.74	8.45
Recreational landings	8.48	4.24	2.54	2.93	3.65	4.04	2.94	5.74	3.66	NA
Com. fish size (in)	9	9	9	9	9	9	9	9	9	9
Com. min. mesh size (in, diamond)	4.5/5.0	4.5/5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Threshold (lb)	500/100	500/100	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 7/1-11/30	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 -11/30	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 10/110/31	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

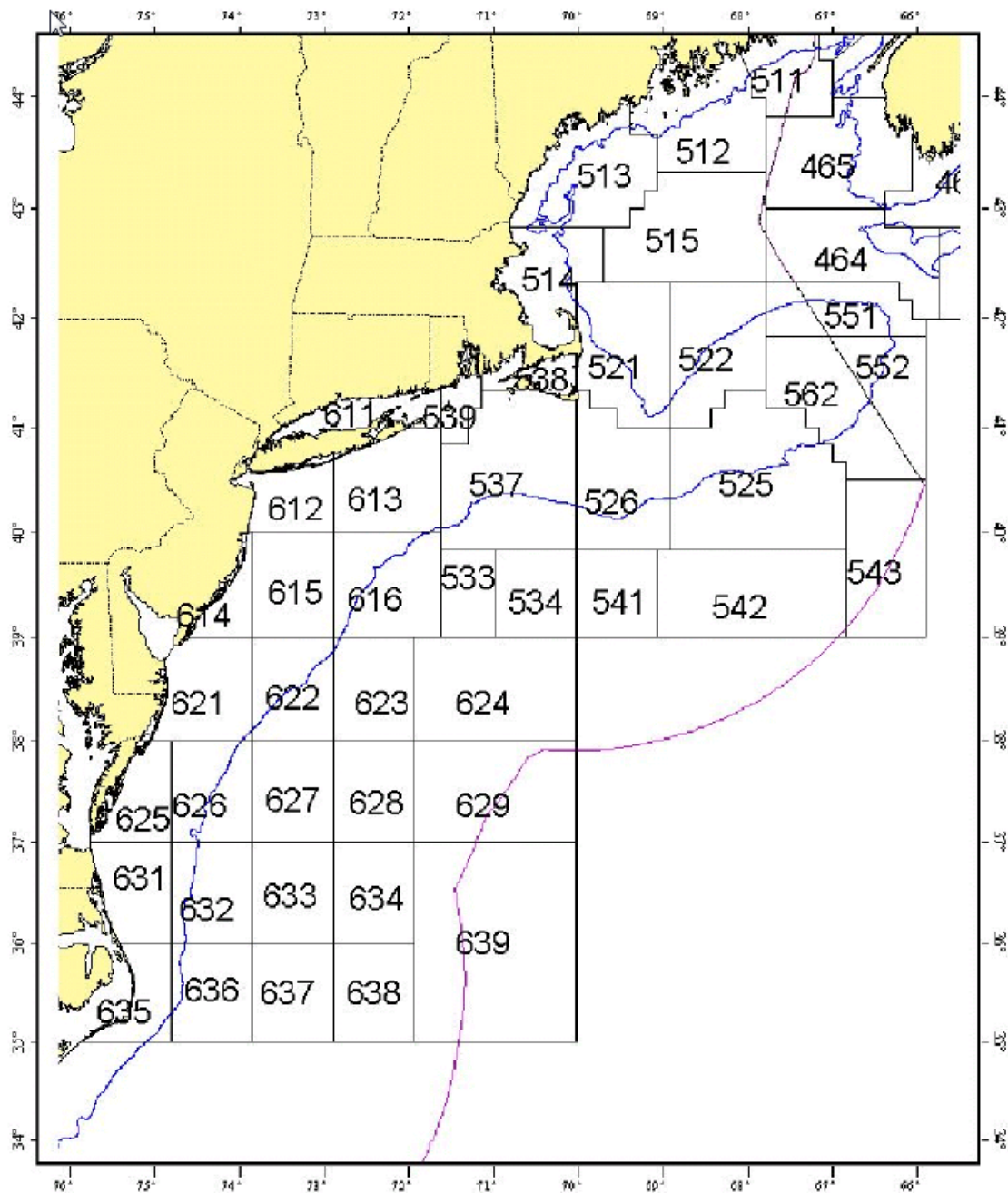
<sup>a</sup>Adjusted for RSA and projected discards. <sup>b</sup>In 2009, the SSC recommend an ABC of 11.70 million lb. Based on the Data Poor Stocks Workgroup Panel Report, which was not available to the SSC at the time the recommendation was made, NMFS increased the TAC to 15.54 million lb. NA=Not applicable or not yet available.

NMFS statistical areas are shown in Figure 4. VTR data suggest that statistical area 616, which includes Hudson canyon, was responsible for the majority of the catch, 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 2011, as well as associated trips, NMFS VTR data.**

Statistical Area	Scup Catch (percent)	Scup Trips (N)
616	32.25	571
539	17.15	2347
613	12.73	1403
537	12.31	747
611	11.73	2421

Based on VTR data for 2011, the bulk of scup landings were taken by bottom otter trawls (94 percent), followed by pots and traps (< 3 percent), floating 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). 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 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. GRAs became effective on November 1, 2000 for the northern area with an exemption for the herring fishery. The GRAs were modified in size in late 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. NMFS Statistical Areas.**

The Winter I possession limit for 2012 is 50,000 lb, until 80 percent of the landings are reached, at which point the possession limit drops to 1,000 lb. This was 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 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



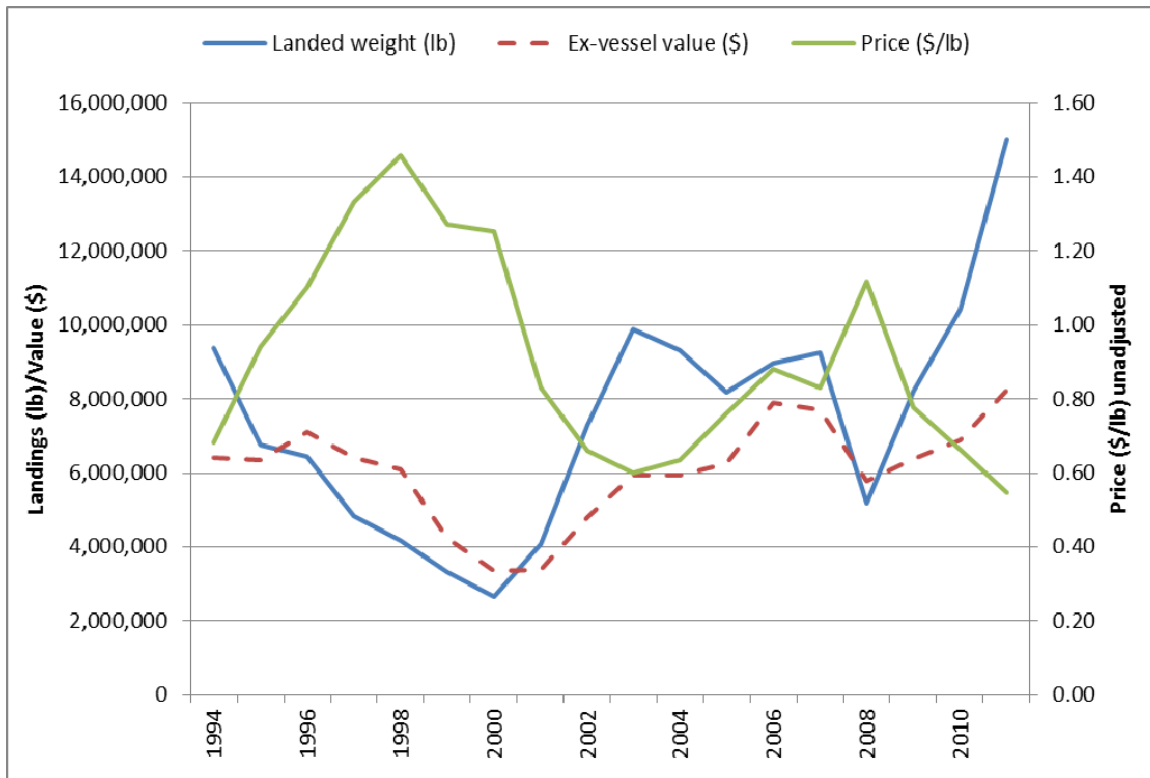
3,000 lb to result in a 5,000 lb possession limit. The possession limits were chosen as an appropriate balance between the economic concerns of the industry (i.e., landing enough scup to make the trip economically viable) and the need to ensure the equitable distribution of the quota over the period.

A threshold analysis was conducted to examine how the change in possession limit and period quotas may change the landings patterns for vessels fishing in the winter periods. These data indicate that the overall number of trips taken in Winter I of 2012 increased relative to 2011. The increase is primarily in trips landing less than 500 lb of scup.

**Table 3. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of scup for 2011-2012. Note: 2012 data are preliminary. C = Confidential.**

<u>Time Period</u>	<u>Threshold</u>	<u>Vessels</u>	<u>%</u>	<u>Trips</u>	<u>%</u>	<u>Pounds</u>	<u>%</u>
	>=1	207	100%	3,342	100%	5,807,280	100%
<b>2011</b>	>=500	128	62%	1,573	47%	5,590,146	96%
<b>Winter</b>	>=5000	82	40%	337	10%	3,198,149	55%
<b>I</b>	>=10000	54	26%	115	3%	1,665,417	29%
<b>(Jan-Apr)</b>	>=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%
<u>Period</u>	<u>Threshold</u>	<u>Vessels</u>	<u>%</u>	<u>Trips</u>	<u>%</u>	<u>Pounds</u>	<u>%</u>
	>=1	181	100%	3,259	100%	2,638,811	100%
<b>2011</b>	>=500	90	50%	1,183	36%	2,416,371	92%
<b>Winter</b>	>=5000	39	22%	91	3%	614,747	23%
<b>II</b>	>=10000	c	c	c	c	c	c
<b>(Nov-Dec)</b>	>=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%
<u>Time Period</u>	<u>Threshold</u>	<u>Vessels</u>	<u>%</u>	<u>Trips</u>	<u>%</u>	<u>Pounds</u>	<u>%</u>
	>=1	215	100%	4,641	100%	5,346,640	100%
<b>2012</b>	>=500	112	52%	1,762	38%	5,020,805	94%
<b>Winter</b>	>=5000	57	27%	237	5%	2,423,926	45%
<b>I</b>	>=10000	34	16%	75	2%	1,319,872	25%
<b>(Jan-Apr)</b>	>=15000	19	9%	41	1%	915,408	17%
	>=20000	11	5%	19	0%	536,305	10%
	>=25000	8	4%	10	0%	331,895	6%
	>=30000	4	2%	5	0%	195,540	4%
	>=50000	0	0%	0	0%	0	0%

Scup ex-vessel revenues based on dealer data have ranged from \$3.3 to \$8.2 million for the 1994 through 2011 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 2011, 15.0 million pounds of scup were landed generating \$8.2 million in revenues.



**Figure 5. Landings, ex-vessel value, and price (unadjusted) for scup, Maine through North Carolina, 1994-2011.**

When examining the landings and prices by period for 2006-2011, 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/](http://www.nefsc.noaa.gov/read/socialsci/community_profiles/)

**Table 4. Commercial scup landings, ex-vessel value, and nominal price, by period, 2006-2011.**

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

To examine recent landings patterns among ports, 2011 NMFS dealer data are used. 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 2011 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 SCP (lb)	# SCP Vessels
PT. JUDITH, RI	4,407,054	116
MONTAUK, NY	2,326,640	81
LITTLE COMPTON, RI	1,374,451	19
PT. PLEASANT, NJ	1,129,143	25
NEW BEDFORD, MA	724,475	49
HAMPTON BAY, NY	505,652	36
CAPE MAY, NJ	421,411	23
PT. LOOKOUT, NY	347,568	6
STONINGTON, CT	334,651	24
NEWPORT NEWS, VA	321,160	23
BELFORD, NJ	301,518	16
NEWPORT, RI	290,549	16
HAMPTON, VA	289,441	26
CHINCOTEAGUE, VA	182,974	9
AMAGANSETT, NY	169,978	4
TIVERTON, RI	C	C
NEW LONDON, CT	134,578	5
MATTITUCK, NY	129,123	4
WANCHESE, NC	121,649	17

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (47) who bought scup in 2011 (Table 6). All dealers bought approximately \$8.2 million of scup in 2011.

**Table 6. Dealers reporting buying scup, by state in 2011.**

<b>Number of Dealers</b>	<b>MA</b>	<b>RI</b>	<b>CT</b>	<b>NY</b>	<b>NJ</b>	<b>DE</b>	<b>MD</b>	<b>VA</b>	<b>NC</b>	<b>Other</b>
	31	37	10	47	18	C	3	8	12	1

Note: C = Confidential.

### *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 (NY-MA) developed regulations intended to land 97 percent of allocation. The 2012 recreational fishing measures in Federal waters are given in Table 1, and the 2012 state-specific measures are given in Table 7.

Recreational data are available through the Marine Recreational Fishery Statistics Survey (MRFSS, 1981-2003), with recent years' estimates revised under the Marine Recreational Information Program (MRIP, 2004-2011). Recreational catch and landings 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 ( $\leq 3$  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). The states of New York, Connecticut, and Massachusetts land the majority of fish (Table 10).

**Table 7. Scup recreational fishing measures in state waters for 2012, by state.**

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts For Hire	11	20 fish from May 1-10 and June 25-Dec 31; 45 fish from May 11-June 24	May 1- December 31
Private Angler	10.5	20 fish; private vessels with 6 or more persons aboard are prohibited from possessing more than 100 scup per day	May 1- December 31
Rhode Island For Hire	11	20 fish from May 1-Aug 31 and Nov 1-Dec 31; 40 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10.5	20 fish	May 1- December 31
Connecticut For Hire	11" except 9" for shore mode at 44 designated sites	20 fish from May 1-Aug 31 and Nov 1-Dec 31; 40 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10.5	20 fish	May 1- December 31
New York For Hire	11	20 fish from May 1-Aug 31 and Nov 1-Dec 31; 40 fish from Sept 1-Oct 31	May 1- December 31
Private Angler	10.5	20 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, 1981-2011.**

<b>Year</b>	<b>Catch ('000 of fish)</b>	<b>Landings ('000 of fish)</b>	<b>Landings ('000 lb)</b>
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

**Table 9. Percentage of scup recreational landings (MRIP Type A+B1 in number of fish) by year and area, Maine through North Carolina, 2002-2011. Area information is self-reported based on the area where the majority of fishing activity occurred per angler trip.**

<b>Year</b>	<b>Scup</b>	
	<b>State &lt;= 3 mi</b>	<b>EEZ &gt; 3 mi</b>
2002	91.6	8.4
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
<b>Avg. 2002-2011</b>	90.3	9.7
<b>Avg. 2009- 2011</b>	96.8	3.2

**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, 2010 and 2011.**

<b>State</b>	<b>2010</b>	<b>2011</b>
<b>Maine</b>	0.0	0.0
<b>New Hampshire</b>	0.0	0.0
<b>Massachusetts</b>	18.0	25.7
<b>Rhode Island</b>	7.7	18.6
<b>Connecticut</b>	21.1	30.5
<b>New York</b>	38.7	23.4
<b>New Jersey</b>	14.4	1.5
<b>Delaware</b>	0.0	0.0
<b>Maryland</b>	0.0	0.0
<b>Virginia</b>	0.1	0.3
<b>North Carolina</b>	0.0	0.0
<b>Total</b>	<b>100%</b>	<b>100%</b>

In 2011, there were 761 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, 1981-2011.**

Year	Mode		
	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
<b>% of Total, 1981-2011</b>	10%	17%	73%
<b>% of Total, 2007-2011</b>	8%	22%	70%

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.**

	<b>Percent</b>	<b>Number of anglers in 2005 (thousands)</b>
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

Source: Steinback et al., 2009.

## References

Gentner, B. and S.Steinback. 2008. The economic contribution of marine angler expenditures in the United States, 2006. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-94, 301p.

Northeast Data Poor Stocks Working Group. 2009. The Northeast Data Poor Stocks Working Group Report, December 8-12, 2008 Meeting. Part A. Skate species complex, deep sea red crab, Atlantic wolffish, scup, and black sea bass. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 09-02; 496 p.

Steimle, F.W, C. A. Zetlin, P. L. Berrien, D. L. Johnson, and S. Chang. 1999a. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-149

Steinback, S., K. Wallmo, P. Clay. 2009. Saltwater sport fishing for food or income in the Northeastern US: statistical estimates and policy implications. *Marine Policy* 33:49-57.

Terceiro M. 2011. Stock Assessment of Scup for 2011. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 11-21; 98 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://www.nefsc.noaa.gov/nefsc/publications/>

**Coakley, Jessica**

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**Subject:** FW: Scup Commercial Measures

**From:** James R Lovgren [mailto:[jlovgren@hawaii.edu](mailto:jlovgren@hawaii.edu)]

**Sent:** Tuesday, July 31, 2012 2:08 PM

**To:** Coakley, Jessica

**Subject:** Re: Scup Commercial Measures

I support lowering the size limit to 8 inches, but if anything is to be done with the winter one trip limit, the limit should be lowered not raised. 75,000 pounds is absurd. Lets not forget that the 50,000 pounds is a Daily limit which in itself increased the possible weekly landings 4 fold over the previous one a week landing at a lower limit. One of the reasons that the winter one quota is not being caught, is that the stock is not as healthy as the NEFSC believes, [this is my opinion and many other fisherman I know], the other reason is the prices are way lower last season because of the higher trip limit. NMFS data confirms the lower price. Most Fishermen will not fish [and work their asses off] if they are not going to make enough to make it worth their while. Due to the sustained downward spiral in prices since the increases in the trip limit, many fishermen have not even bothered to waste their fuel to look for scup. I know in Point Pleasant due to the cost of fuel and the bad weather most of us didn't even bother to look for scup last winter. Also, what gives a member of the public such influence over the monitoring committee that this huge, and absolutely unvetted request to increase a trip limit in such a huge way is even considered? the AP met a month ago and that request could have been brought up then, the fact that it wasn't just shows that someone is not playing by the rules because they think they deserve special treatment. this should have been discussed then and not after the fact without having the AP discuss it face to face.

DISCARD THIS IDEA! thanks, Jim

## Coakley, Jessica

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**From:** Capt. Monty Hawkins <[REDACTED]>  
**Sent:** Tuesday, July 31, 2012 9:41 PM  
**To:** Coakley, Jessica; James R Lovgren  
**Subject:** Re: Scup Commercial Measures

Jim, Jessica - Not my fishery but Jim's comment looks like very sound logic to me. (DISCARD THIS IDEA!)  
Any ideas for restoring scup below Cape May? Cheers, Monty

I support lowering the size limit to 8 inches, but if anything is to be done with the winter one trip limit, the limit should be lowered not raised. 75,000 pounds is absurd. Lets not forget that the 50,000 pounds is a Daily limit which in itself increased the possible weekly landings 4 fold over the previous one a week landing at a lower limit. One of the reasons that the winter one quota is not being caught, is that the stock is not as healthy as the NEFSC believes, [this is my opinion and many other fisherman I know], the other reason is the prices are way lower last season because of the higher trip limit. NMFS data confirms the lower price. Most Fishermen will not fish [and work their asses off] if they are not going to make enough to make it worth their while. Due to the sustained downward spiral in prices since the increases in the trip limit, many fishermen have not even bothered to waste their fuel to look for scup. I know in Point Pleasant due to the cost of fuel and the bad weather most of us didn't even bother to look for scup last winter. Also, what gives a member of the public such influence over the monitoring committee that this huge, and absolutely unvetted request to increase a trip limit in such a huge way is even considered? The AP met a month ago and that request could have been brought up then, the fact that it wasn't just shows that someone is not playing by the rules because they think they deserve special treatment. This should have been discussed then and not after the fact without having the AP discuss it face to face. DISCARD THIS IDEA! thanks, Jim



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997 Ocean Drive, Cape May, New Jersey 08204, U.S.A.

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August 1, 2012

Mr. Jack Travelstead, Chairman  
Demersal and Coastal Migratory Committee  
Mid-Atlantic Fishery Management Council  
800 North State Street, Suite 201  
Dover, DE 19901-3910

Dear Chairman Travelstead, members of the Committee, members of the Council and members of the ASMFC Summer Flounder, Scup and Black Sea Bass Board:

I am writing on behalf of the 150 employees of Lund's Fisheries, Inc., and the independent fishermen who supply fish to our processing facility in Cape May, NJ, to alert you to two important issues, concerning the management of the Scup fishery, which we look forward to addressing with you when you meet in Philadelphia on August 15.

Both of these issues; an increase in the Federal possession limit during the Winter I period, from 50,000 pounds to 75,000 pounds, in order to further incentivize vessels to fish for scup, and a decrease in the commercial minimum fish size, from 9 to 8 inches, in order to turn discards into landings, were discussed in detail with the monitoring committee when they met on July 27.

Although an increase in the Federal possession limit did occur last year, only 41% of the Winter I quota was harvested in 2012. It is important that this possession limit be further increased to provide additional opportunity for larger vessels to participate in this fishery by allowing them to catch sufficient product to cover their costs, including high fuel costs, and have a chance to make a profit when making a trip. We ask that a 75,000 pound limit be established during the 3-year specification period (2013-2015 fishing years) that you will be addressing later this month. We are developing markets beyond the traditional fresh fish market and it takes a sufficient supply of fish to create additional demand for them and thereby create economic activity in the fishery and our community.

Regarding a decrease in the commercial minimum size, it is clear that most 8 inch scup are believed to be mature at that size and are now being discarded in the fishery. It is our understanding that this change was recommended by the Advisory Panel and that the monitoring committee received scientific advice indicating that this decrease in the minimum size would have no biological impact on the assessment but would allow the industry to land the fish rather than discard them, further aiding in maximizing our opportunities with the healthy scup resource.

Thank you for your attention to and your consideration of our recommendations.

With best regards,

*Jeff Reichle*

Jeffrey B. Reichle, President

**Coakley, Jessica**

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**Subject:** FW: Scup Commercial Measures

Jessica: I am merely a recreational representative, but have confidence in the recommendations of commercial harvesters; I support the request to reduce the minimum size to 8 inches and also or the Council to consider raising the trip limit to 75,000 lbs.

Dr. Robert Allen  
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