MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Richard B. Robins, Jr.
Chairman

Lee G. Anderson
Vice Chairman

800 North State Street, Suite 201
Dover, Delaware 19901-3910
Tel: 302-674-2331
Toll Free: 877-446-2362
FAX: 302-674-5399
www.mafmc.org

Christopher M. Moore, Ph.D.
Executive Director

Scup Recommendation Summary

Materials provided in this tab include the Scup Monitoring Committee Recommendations for annual catch targets (ACTs) and other commercial fishery management measures, a memo from Jessica Coakley to Chris Moore, the Scup Projection Update, and projection output files. The Scientific and Statistical Committee (SSC) recommendations for acceptable biological catch (ABC) is the last item contained within briefing book tab 3 (summer flounder).

A summary of the values associated with the SSC and Monitoring Committee recommendations are given here. The SSC recommended an ABC that is less than the OFL to address scientific uncertainty. The Scup Monitoring Committee recommended ACTs for each of the fisheries that are set equal to the ACLs. Please see the SSC and Monitoring Committee reports for additional details.

Scup		
OFL	65.88 mil lb	
ABC	53.35 mil lb	
	Commercial	**Recreational**
ACLs	41.61 mil lb	11.74 mil lb
ACTs	41.61 mil lb	11.74 mil lb
Landings levels*	34.43 mil lb	10.85 mil lb

*After RSA is deducted, these levels would become the harvest limit and commercial quota.

July 29, 2011

Scup Monitoring Committee Recommendations

Attendees: John Maniscalco (NY-DEC), Jason McNamee (RI-DFW), Mark Terceiro (NEFSC), Tom Baum (NJ-DEP), Greg Wojcik (CT-DEEP), Chris Batsavage (NC-DMF), Rob O'Reilly (VMRC), Rich Wong (DNREC), Steve Doctor (MD-DNR), Mike Ruccio (NERO), Jessica Coakley (Council Staff), Jeff Kaelin (Lund's Fisheries), Lee Anderson (Council vice-chair), Toni Kerns (ASMFC)

Discussion: The Scup Monitoring Committee was presented with the SSC's OFL and ABC recommendations. The OFL and ABC recommended for 2012 are 65.88 million lb and 53.35 million lb, respectively. The Monitoring Committee discussed the different components of the scup catch.

Consensus Recommendation:

Annual Catch Targets and Basis for Derivation

- The Scup Monitoring Committee recommended recreational ACT is 11.74 million lb (recreational ACT = recreational ACL). The Commercial ACT recommended is 41.6 million lb (commercial ACT = commercial ACL). This results in a recreational landings level of 10.85 million lb and commercial landings level of 34.43 million lb. After RSA is deducted, these landings levels are the recreational harvest limit and commercial quota.

Relevant Sources of Management Uncertainty

- Past sector-specific landings and catch performance can be used as a basis for quantifying management uncertainty (implementation error), and as an indicator of the future ability to achieve 2012 ACTs.

	2010 Limits (million lb)	2010 Correspondings Catch, Landings, or Discards (million lb)	% overage (+)/underage(-)
ABC	17.09	20.23	18
comm quota	11.01	10.70	-3
comm discards	2.32	3.37	45
RHL	3.01	5.74	91
rec discards	0.75	0.42	-45
comm TAC	13.33	14.07	6
rec TAC	3.76	6.16	64

- The commercial fishery landings performance has been in line with expectations and the Monitoring Committee recommends that an adjustment to address this aspect of management uncertainty is not necessary. The projected discard estimate appears to be in line with the expected discards for 2012, and is slightly higher than the discards observed in recent years (2006-1010). Therefore, this group does not recommend the commercial ACL be reduced to address management uncertainty in the commercial fishery.

- The projected recreational discard estimate appears to be in line with the expected discards for 2012, and is slightly higher than the discards observed in recent years (2006-2010). Therefore, no adjustment is recommended based on this catch component.

- In 2010, the recreational measures were not adjusted in response to 2009 overages. In 2011, the harvest limit was increased to enable status quo measures for the 2011 fishing year, as opposed to taking a reduction in landings in response to the 2010 overage. On that basis, the Scup Monitoring Committee does not have performance information from prior years on which it can technically recommend any adjustment from the recreational ACL for the recreational landings in order to derive a recreational ACT. There is also limited information on fishing effort, fish availability, MRIP intercept sampling support, and any other factors that would also be informative relative to understanding the performance of the 2011 measures. The 91 percent overage is noted, but given the observed landings in 2011 may still be substantially less than the proposed 2012 harvest limit, an uncertainty adjustment is not needed.

- An adjustment for recreational catch or commercial discard estimate precision was not applied.

Other Management Measures

- Possession limits: Industry raised issues to the Scup Monitoring Committee about the current economic constraints in the winter I fishery given the increased quota in 2011, that industry feels requires an increase in possession limits (increase to 50,000 lb) to allow the winter I quota to be taken more efficiently. The Monitoring Committee recommends that increasing the possession limit may not be problematic as the winter I period allocation has been underutilized in recent years; however, the effects of various specific possession limits should be considered. The Council should be cautious when considering adjustments to multiple measures (i.e., possession limits and triggers in conjunction), such that the quota can be fully utilized, but that management can respond to ensure the winter I fishery is closed in time before the quota is exceeded. The quota periods and triggers were initially intended to extend the fishery throughout the year, and throughout each period.

- Based on issues raised by industry, the Scup Monitoring Committee would like to pull any historic or new information together to examine the appropriateness of the current minimum fish size and mesh sizes for discussion next year. No changes to minimum size or the current mesh size are recommended for 2012.

- There are no recommended changes to the GRAs for scup or scup pot requirements for 2012.

- The Monitoring Committee recommends up to 3% for RSA in 2012.

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Christopher M. Moore, Ph.D.
Executive Director

MEMORANDUM

DATE: June 27, 2011

TO: Chris Moore, Executive Director

FROM: Jessica Coakley, Staff

SUBJECT: Scup Management Measures for 2012

Executive Summary

Based on the assessment conducted in June 2010, the scup stock is not overfished and overfishing is not occurring. The ASAP model estimated SSB was 170% of SSB_{MSY} in 2009. Based on updated projections, the staff recommendation for acceptable biological catch (ABC) is 50.44 million lb (22,877 mt) for 2012. This ABC is derived from the same F target that was used in 2010. The Omnibus Annual Catch Limit and Accountability Measures Amendment proposed rule has filed (76 FR 35578, June 17, 2011) and National Marine Fisheries Service (NMFS) has indicated their intention to implement the Council preferred alternatives for scup. Based on the process proposed in the Omnibus Amendment, staff recommend a commercial ACL and recreational ACL of 39.34 million lb (17,844 mt) and 11.10 million lb (5,033 mt), respectively. Staff also recommend a commercial annual catch target (ACT) of 35.41 million lb (16,060 mt), a commercial quota of 29.29 million lb (13,288 mt), a recreational ACT of 7.43 million lb (3,372 mt), and a recreational harvest limit of 6.87 million lb (3,116 mt), for 2012. Staff do not recommend any change to the current minimum fish size (9 inch-TL), gear requirements, possession limits, or GRAs. Staff recommend up to 3% of the total allowable landings (TAL) be made available to the Research Set-Aside Program.

Introduction

The 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 FMP established Monitoring Committees (MCs) 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 MC will focus on recommending measures to address management uncertainty (ACTs). Based on the SSC and Monitoring Committee's recommendations, the Council will make a recommendation to the 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 MC in developing recommendations for the Council and Board to consider for the 2012 fishery for scup.

Catch and Landings

Commercial landings from 1979 and recreational landings from 1981 are provided in the 2011 Data and Projection Update for Scup (Table 1). In 2010, commercial and recreational landings were 10.7 million lb (4,855 mt) and 5.7 million lb (7,460 mt), respectively. The 2011 commercial landings as of the week ending June 11, 2011, indicate that 35% of the summer period quota has been landed (Table 2).

Regulatory Review

Last year (July 2010), the SSC met to recommend an ABC for scup for fishing year 2011. The overfishing limit (OFL) for 2011 was derived directly from the stock assessment based on an FMSY proxy of $F_{40\%}$ = 0.18, and the OFL was specified as 67.53 million lb (30,631 mt) for 2011 (derived as the 50th percentile of yield at $F_{40\%}$ = 0.18). The SSC recommended an ABC based on 75% of F_{MSY} (F = 0.133), which equate to an ABC of 51.7 million lb (23,451 mt; 50th percentile of catch at F = 0.133) with associated landings of 42.9 million lb (19,459 mt).

At the July 2010 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: the estimates of biomass and fishing mortality from the scup stock assessment are likely to be non-robust because the assessment model contains very little information on the abundance of old age classes; 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) that are being used for the first year, and their influence on the selectivity pattern and results of the assessment.

Based on the 2011 ABC recommendations, the Council recommended a TAC of 31.92 million lb (14,479 mt), which is then allocated 78% as commercial quota and 22% as recreational harvest limit. After deducting research set-aside, the 2011 commercial quota is 20.36 million lb (9,235 mt) and the recreational harvest limit is 5.74 million lb (2,604 mt; Table 1)). Management measures in the commercial fishery other than quotas and harvest limits (i.e., minimum fish size, gear requirements, etc.) have remained constant since 2005.

Table 1. Summary of scup management measures and landings, 1996-2011, and 2012 staff proposed.

Management measures	1996	1997	1998	1999	2000	2001	2002	2003	2004
ABC (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA
TAC (m lb)	-	9.10	7.28	5.92	5.92	8.37	12.92	18.65	18.65
Com. TAC (m lb)	-	7.10	5.68	4.62	4.62	6.53	10.08	14.55	14.55
Com. Quota initial (m lb)	-	6.00	4.57	2.53	2.53	4.44	8.00	12.47	12.47
Com. Quota adj. (m lbs)	-	-	-	-	1.75	3.53	7.25	12.10	12.34
Com. Landings(m lb)	6.49	4.82	4.18	3.32	2.66	3.81	7.00	9.71	9.33
Rec. TAC (m lb)	-	2.0	1.60	1.30	1.30	1.84	2.84	4.10	4.10
Rec. harvest limit initial (m lb)	-	1.95	1.55	1.24	1.24	1.77	2.77	4.03	4.03
Rec. harvest limit adj. (m lb)	-	-	-	-	-	-	2.71	4.01	4.01
Rec. landings (m lb)	2.16	1.20	0.88	1.89	5.44	4.26	3.62	8.48	4.24
Com. fish size (in)	9	9	9	9	9	9	9	9	9
Min. mesh size (in, diamond)	4.0	4.5	4.5	4.5	4.5	4.5	4.5/5.0	4.5/5.0	4.5/5.0
Mesh threshold	4000/ 1000	4000/ 1000	4000/ 1000	200/ 100	200/ 100	500/ 100	500/ 100	500/ 100	500/ 100

Management measures	2005	2006	2007	2008	2009	2010	2011	2012 staff proposed
ABC (m lb)	NA	NA	NA	NA	11.70[a]	17.09	51.70	50.44
TAC (m lb)	18.65	19.79	13.97	9.90	15.54[a]	17.09	31.92	50.44
Com. TAC (m lb)	14.55	15.44	10.90	7.72	12.12	13.33	24.92	-
Com. Quota initial (m lb)	12.47	12.08	9.18	5.46	8.54	11.01	20.67	29.29
Com. Quota adj. (m lbs)	12.23	11.93	8.90	5.24	8.37	10.68	20.36	-
Com. Landings (m lb)	9.40	8.96	9.25	5.18	8.19	10.70	-	-
Rec. TAC (m lb)	4.10	4.35	3.07	2.18	3.42	3.76	7.02	-
Rec. harvest limit initial (m lb)	4.02	4.19	2.82	1.88	2.64	3.10	5.83	6.87
Rec. harvest limit adj. (m lb)	3.96	4.15	2.74	1.83	2.59	3.01	5.74	-
Rec. landings (m lb)	2.54	2.93	3.65	4.04	2.94	5.74	-	-
Com. fish size (in)	9	9	9	9	9	9	9	9
Min. mesh size (in, diamond)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Mesh threshold	500/ 200	500/ 200	500/ 200	500/ 200	500/ 200	500/ 200	500/ 200	500/ 200

[a] 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.

Table 2. The 2011 scup summer period quota and the amount of scup landed by commercial fishermen in the summer period.

	Commercial Summer Period			Research
State	Cumulative Landings (lb)[a]	2011 Summer Quota (lb)[b]	Percent of Quota (%)	Set-Aside Landings (lb)[a]
ME	0	-	-	0
NH	0	-	-	0
MA	135,067	-	-	12,849
RI	1,710,590	-	-	354
CT	14,324	-	-	0
NY	221,224	-	-	19,535
NJ	4,950	-	-	0
DE	0	-	-	0
MD	0	-	-	0
VA	2,053	-	-	0
NC	0	-	-	0
Other	0	-	-	0
Totals	2,088,208	5,955,738	35	32,738

[a]Cumulative landings as of week ending June 11, 2011. Source: NMFS Weekly Quota Report.

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 assessment update presented in June 2010 indicated that the scup stock is not overfished and overfishing is not occurring relative to the biological reference points. Fishing mortality in 2009 = 0.043, which is less than F_{MSY} = 0.177). SSB in 2009 was about 342 million lb (155,000 mt).

The 2011 Data and Projection Update for Scup indicates that fishing at 75% of F_{MSY} (F=0.133) during

2012 is projected to maintain the stock above SSB_{MSY} and could provide median landings in 2012 of 42.8 million lb (19,418 mt), which is above the MSY landings of 29.0 million lb (13,134 mt). The update projected the 2010 SSB at 394.6 million lb (178,955 mt), which is about 194% of SSB_{MSY}. Projected F in 2010 is 0.053.

Basis for 2012 ABC Recommendation

Although multi-year management measures can be specified through this FMP, staff do not think it appropriate to set measures for multiple years at this time given the potential transition to a new assessment process (i.e., operational and research tracks). This is also the first year of the new Omnibus measures will be implemented. Therefore, staff recommend measures be specified for one year, fishing year 2012.

The OFL of 65.88 million lb (29,883 mt) is defined by the fishing mortality threshold of F=0.177 and projected biomass in 2012. 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. As a level 3 assessment, ABC could be derived based on an OFL distribution generated by a chosen CV or by applying the control rule 75% of F_{MSY} to derive ABC. Given the uncertainty associated with selecting the appropriate OFL distribution and identification of a CV which characterizes all sources of uncertainty in the assessment of the scup stock, staff recommend ABC be derived from the control rule 75% of F_{MSY}. Staff recommend an ABC of 50.44 million lb (22,877 mt; Table 3).

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; Table 4)). An ABC of 50.44 million lb (22,877 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 2007-2009 average ratios; 89% of the dead discards are attributable to the commercial fishery, 11% to the recreational.

Table 3. Allocation of the scup ABC to the commercial and recreational ACLs for 2012 (Staff recommended).

	Catch (Landings + Discards)	Landings Portion	Discards Portion
ABC	50.44 mil lb (22,877 mt)	42.81 mil lb (19,418 mt)	7.62 mil lb (3,459 mt)
Recreational ACL	11.10 mil lb (5,033 mt)	10.26 mil lb (4,654 mt)	0.84 mil lb (379 mt)
Commercial ACL	39.34 mil lb (17,844 mt)	32.55 mil lb (14,764 mt)	6.79 mil lb (3,080 mt)

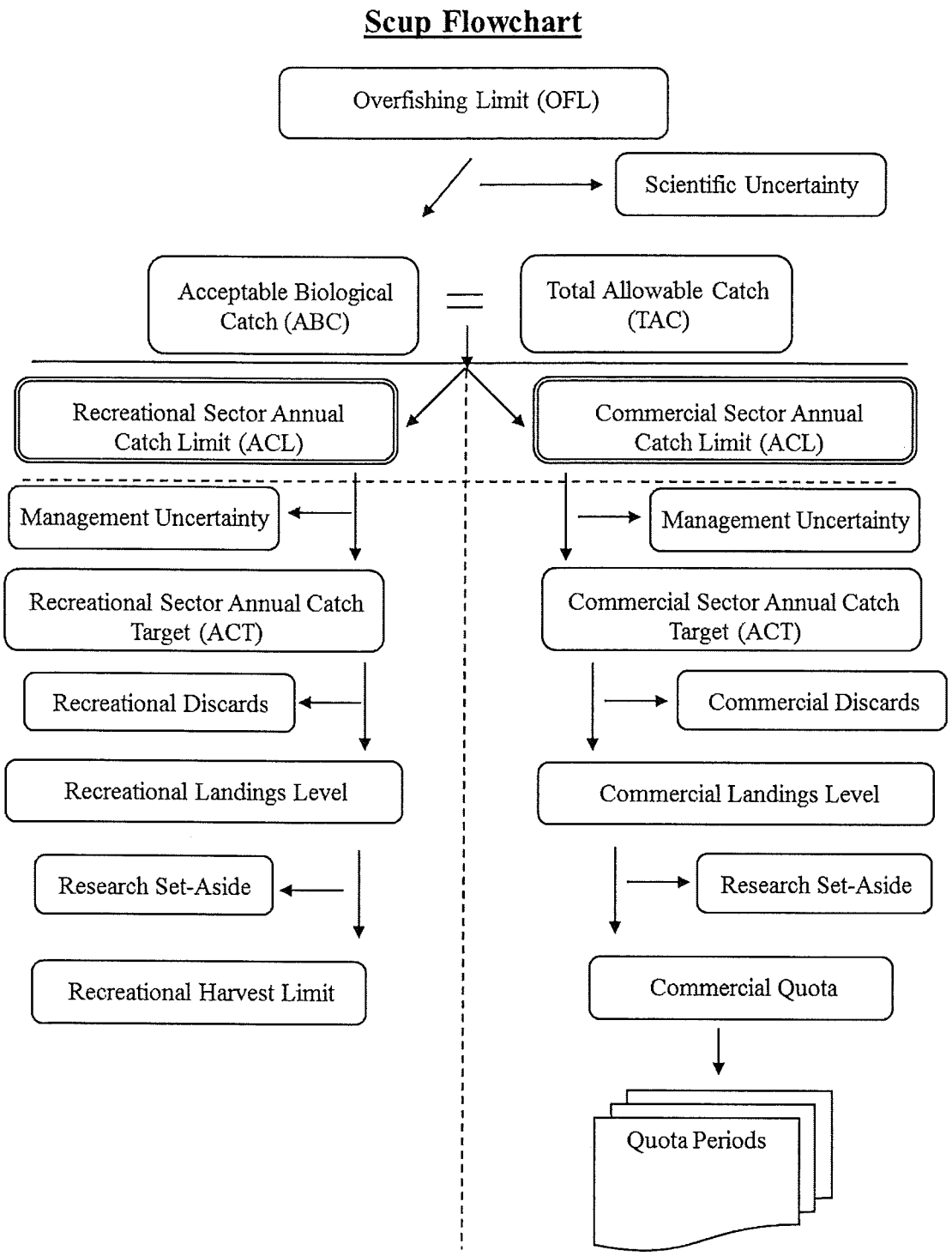

Figure 1. Scup flowchart.

Table 4. Omnibus Amendment terminology and relationship to previous FMP terms.

Previous Term	New Term	Definition	Use in Omnibus
Overfishing Limit (OFL)	Unchanged	The OFL is an estimate of the catch level above which overfishing is occurring. The amount of catch that corresponds to the estimate of MFMT applied to a stock and is expressed in terms of numbers or weight of fish.	OFL = catch level calculated by MFMT
Acceptable Biological Catch (ABC)	Unchanged	The level of a stock's annual catch that accounts for the scientific uncertainty in the estimate of OFL. May not exceed OFL.	ABC is established by SSC
Fishing	Sector	Distinct user group to which separate management strategies and separate catch quotas apply. For scup, there are recreational and commercial sectors.	Recreational Sector, Commercial Sector
Total Allowable Catch (TAC)	Sum of Sector Annual Catch Limits (ACL)	The level of annual catch of a stock that serves as the basis for invoking AMs. The sum of the sector ACLs may not exceed ABC. For scup Σ sector ACLs is set equal to ABC.	Σ sector ACLs = TAC = ABC
	Sector Annual Catch Target (ACT)	An amount of annual catch of a stock by sector that is the management target of the fishery, including discards, and accounts for management uncertainty in controlling the actual catch at or below ACL.	Recreational ACT, Commercial ACT
Total Allowable Landings (TAL)	Sector Total Allowable Landings (TAL)	Annual amount of total landings permitted by sector after removing estimated discards.	Sector TAL = sector ACT – sector discards
Research Set-Aside (RSA)	Unchanged	Amount of Total Allowable Landings (TAL) up to 3 percent that may be set aside to fund research activities	TAL – X% (up to 3%) = RHL and Commercial Quota
Recreational Harvest Limit (RHL)	Unchanged	Annual management target for the recreational sector after removing research set-aside.	RHL = Recreational Sector TAL- RSA
Commercial Quota	Unchanged	Annual management target for the commercial sector after removing research set-aside.	Commercial Quota = Commercial Sector TAL -RSA
Optimum Yield (OY)	Unchanged	The long-term average amount of desired yield from a stock or fishery. OY cannot exceed MSY.	OY
½ B_{MSY} Proxy	Minimum Stock Size Threshold (MSST)	Level of stock biomass below which the stock is considered to be overfished.	MSST = ½ B_{MSY} Proxy
$F_{40\%}$ = F_{MSY} Proxy	Maximum Fishing Mortality Threshold (MFMT)	The level of fishing mortality (F), on an annual basis, above which overfishing is occurring.	MFMT = $F_{40\%}$ = F_{MSY} Proxy

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 and Table 4. The Committee may provide other recommendations relevant to setting catch limits consistent with the Magnuson-Stevens Act (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).

Staff recommend the Monitoring Committee consider past sector-specific landings performance, as a basis for quantifying management uncertainty (i.e., implementation error) as an indicator of future ability to achieve catch targets when developing the 2012 commercial and recreational ACT recommendations (Table 5). The Monitoring Committee should also consider the potential imprecision/variability in expected observed recreational and commercial catch to ensure the sector-specific ACLs are not exceeded. Staff recommend a 10% reduction in catch from the commercial ACL to address potential imprecision in observed catch estimates relative to the catch target for 2012. This would result in a commercial ACT of 35.41 million lb (16,060 mt) for 2012. For the recreational fishery, given the large magnitude overages in recent years, it is recommended that management uncertainty be addressed in part in the setting of the ACT, and the rest in setting of recreational measures for 2012. Staff recommend a 33% reduction in catch from the recreational ACL to address both potential imprecision in observed catch (10%) and past performance (23%; half of the 46%) of the recreational fishery relative to harvest limits. This results in a recreational ACT of 7.43 million lb (3,372 mt).

Table 5. Scup commercial and recreational fishery performance relative to quotas and harvest limits, 2006-2010.

Year	Commercial Landings (mil lb)	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb)	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2006	8.96	11.93	-25%	2.93	4.15	-29%
2007	9.25	8.90	+4%	3.65	2.74	+33%
2008	5.18	5.24	-1%	4.04	1.83	+121%
2009	8.19	8.37	-2%	2.94	2.59	+14%
2010	10.70	10.68	0%	5.74	3.01	+91%
5-yr Avg.	-	-	-5%	-	-	+46%

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 (Table 3). Based on the staff recommended ACTs, the commercial quota would be 29.29 million lb (13,288mt) and the recreational harvest limit would be 6.87 million lb (3,116 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 13.22 million lb (5,994 mt) for Winter 1, 11.41 million lb (5,176 mt) for Summer, and 4.67 million lb (2,118 mt) for Winter II.

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 2012 will not be determined until after the first four waves of 2011 recreational landings are reviewed. These data should be available in October 2011. The Monitoring Committee will meet in November 2011 to review these landings data and make recommendations regarding changes in the recreational possession limit, minimum size, or season. Given the performance of the recreational fishery relative to the recreational harvest limit, 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

In 2005, the Council and Commission recommended possession limit changes during the Winter II periods only. They recommended a possession limit of 2,000 lb (in the Winter II fishery). In addition, if transfer of quota occurs between Winter I and Winter II, then the Winter II possession limit should increase at 1,500 lb intervals for every 500,000 lb of scup transferred, i.e., if a 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 Winter I landings limit will remain unchanged, i.e., 30,000 lb possession limit (state landings limit for a 2 week period) until 80% of the landings are reached and then the possession limit would drop to 1,000 lb. For 2011 the Commission implemented a 30,000 lb landings limit per week in state waters for Winter I; which was more liberal than bi-weekly limit implemented in 2010. 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 review of 2010 and 2011 dealer data indicates that the possession limits should not change for 2012; therefore, staff recommend no changes in possession limit in Federal waters (Tables 6 and 7).

Landings and quotas by period are given in Table 8. The average price per pound by fishing period is given in Table 9. 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.

Table 6. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of scup, based on 2010.

Time Period	Threshold	Vessels	%	Trips	%	Pounds	%
	>=1	203	100%	3,688	100%	4,740,681	100%
2010	>=500	123	61%	1,534	42%	4,483,560	95%
Winter	>=5000	65	32%	244	7%	2,104,643	44%
I	>=10000	35	17%	64	2%	857,147	18%
(Jan-Apr)	>=15000	13	6%	16	0%	282,473	6%
	>=20000	5	2%	5	0%	116,795	2%
	>=25000	c*	c	c	c	c	c
	>=30000	0	0%	0	0%	0	0%
Time Period	Threshold	Vessels	%	Trips	%	Pounds	%
	>=1	177	100%	3,046	100%	1,482,669	100%
2010	>=500	105	59%	977	32%	1,223,692	83%
Winter	>=5000	6	c	13	c	89,625	c
II	>=10000	c*	c	c	c	c	c
(Nov-Dec)	>=15000	0	0%	0	0%	0	0%
	>=20000	0	0%	0	0%	0	0%
	>=25000	0	0%	0	0%	0	0%
	>=30000	0	0%	0	0%	0	0%

c*= confidential Source: Dealer Weighout Data, as of May 27, 2010 and NMFS Fisheries Statistics Office.

Table 7. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of scup, based on 2011 Dealer Weighout Data.

JAN - APR 2011 SCUP LANDINGS BY MONTH WITH VESSELS, DEALERS COUNT

Thresholds	TOTAL LANDINGS		COUNT TRIPS		COUNT VESSELS		COUNT DEALERS	
	POUNDS	%	TRIPS	%	VESSELS	%	DEALERS	%
>=1	5,817,083	100.00%	1527	100.00%	189	100.00%	70	100.00%
1-1000	147,522	2.54%	803	52.59%	163	86.24%	65	92.86%
1001-2000	214,773	3.69%	143	9.36%	64	33.86%	35	50.00%
2001-3000	213,033	3.66%	84	5.50%	43	22.75%	27	38.57%
3001-4000	311,386	5.35%	91	5.96%	39	20.63%	27	38.57%
4001-5000	222,213	3.82%	49	3.21%	33	17.46%	25	35.71%
5001-6000	256,789	4.41%	47	3.08%	28	14.81%	17	24.29%
6001-7000	288,190	4.95%	44	2.88%	30	15.87%	21	30.00%
7001-8000	161,923	2.78%	22	1.44%	16	8.47%	12	17.14%
8001-9000	187,365	3.22%	22	1.44%	17	8.99%	15	21.43%
9001-10000	314,772	5.41%	33	2.16%	28	14.81%	17	24.29%
10001-11000	212,218	3.65%	20	1.31%	14	7.41%	10	14.29%
11001-12000	219,621	3.78%	19	1.24%	14	7.41%	12	17.14%
12001-13000	137,542	2.36%	11	0.72%	9	4.76%	6	8.57%
13001-14000	135,782	2.33%	10	0.65%	8	4.23%	7	10.00%
14001-15000	189,456	3.26%	13	0.85%	9	4.76%	8	11.43%
15001-16000	201,292	3.46%	13	0.85%	10	5.29%	7	10.00%
16001-17000	132,602	2.28%	8	0.52%	7	3.70%	6	8.57%
17001-18000	105,423	1.81%	6	0.39%	6	3.17%	4	5.71%
18001-19000	128,911	2.22%	7	0.46%	7	3.70%	6	8.57%
19001-20000	117,310	2.02%	6	0.39%	6	3.17%	5	7.14%
20001-25000	813,479	13.98%	37	2.42%	26	13.76%	13	18.57%
25001-31000	1,105,481	19.00%	39	2.55%	26	13.76%	16	22.86%

Source: DOC/NOAA/NMFS Analysis and Program Support Division, June 6, 2011.

Table 8. Scup quotas and landings, 2005-2011.

Year	Period	Commercial Quota [a]	Trip Limits	Landings (lbs)	Date Closed	% of Quota Landed
2005	Winter I	5,518,367	30,000/1,000 [b]	3,684,679	--	66.8
	Summer	4,764,806	--	4,265,667	--	89.5
	Winter II	1,949,962	1,500	1,454,988	--	74.6
2006	Winter I	3,554,991	30,000/1,000 [b]	3,626,237	--	102.0
	Summer	4,647,569	--	3,219,929	--	69.3
	Winter II	3,729,581	2,000/1,000 [b]	2,115,323	--	56.7
2007	Winter I	4,012,895	30,000/1,000 [b]	3,400,934	--	84.8
	Summer	3,464,914	--	4,254,987	9/21	122.8
	Winter II	1,417,991	2,000/1,000 [b]	1,590,747	--	112.2
2008	Winter I	2,291,699	30,000/1,000 [b]	2,356,716	--	102.8
	Summer	1,437,558	--	1,935,074	6/16	134.6
	Winter II	940,948	2,000/1,000 [b]	892,318	--	94.8
2009	Winter I	3,777,443	30,000/1,000 [b]	3,774,583	--	99.9
	Summer	2,930,733	--	3,072,340	--	104.8
	Winter II	1,334,791	2,000/1,000 [b]	1,356,961	--	101.7
2010	Winter I	4,964,716	30,000/1,000 [b]	4,740,681	--	95.4
	Summer	4,286,759	--	4,175,206	--	97.4
	Winter II	1,754,325	2,000/1,000 [b]	1,482,669	--	84.5
2011	Winter I	proposed 9,184,725 [d]	30,000/1,000 [b]	5,648,867	--	--
	Summer	proposed 7,930,504 [d]	--	2,088,208 [c]	--	--
	Winter II	proposed 3,245,500 [d]	2,000/1,000 [b]	--	--	--

[a] Commercial quotas published on various dates in the Federal Register. [b] Trip limit drops once 80% of the quota is reached. [c] NMFS Weekly Quota Report for week ending June 11, 2011. Source: Dealer Weighout Data, as of June 9, 2011. [d] Proposed by the Council; to be determined if implemented by NMFS.

Table 9. Commercial scup landings and ex-vessel value by year and period.

Year	Period	Landings (lbs)	Nominal Value ($)	Nominal Price Mean ($/lb)
2005	Winter I	3,684,679	2,120,435	0.58
	Summer	4,265,667	3,778,161	0.89
	Winter II	1,454,988	1,077,917	0.74
	Total	9,405,334	6,976,513	0.74
2006	Winter I	3,626,237	2,865,278	0.79
	Summer	3,219,929	3,772,519	1.17
	Winter II	2,115,323	1,250,199	0.59
	Total	8,961,489	7,887,996	0.88
2007	Winter I	3,400,934	3,096,496	0.91
	Summer	4,254,987	2,427,949	0.57
	Winter II	1,590,747	1,164,801	0.73
	Total	9,246,668	6,689,246	0.72
2008	Winter I	2,356,716	2,255,812	0.96
	Summer	1,935,074	2,795,526	1.44
	Winter II	892,318	734,129	0.82
	Total	5,184,108	5,785,467	1.12
2009	Winter I	3,774,583	2,504,951	0.66
	Summer	3,072,340	2,869,310	0.93
	Winter II	1,356,961	884,833	0.65
	Total	8,203,884	6,259,094	0.76
2010	Winter I	4,740,681	2,462,937	0.52
	Summer	4,175,206	3,141,219	0.75
	Winter II	1,482,669	1,160,157	0.78
	Total	10,398,556	6,764,313	0.65

Source: Dealer Weighout Data, as of June 9, 2011.

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 2011. 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 for 2012.

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 for 2012.

Research Set-Aside

Staff recommend up to 3% of the TAL be made available for the Research Set-Aside Program.

2011 Data and Projection Update for Scup

Table 1. Commercial landings (mt) of scup by state. One mt was landed in DE in 1995, included with MD 1995 total. Eight mt were landed in PA in 2004 included with MD 2004 total. Landings include revised Massachusetts landings for 1986-1997.

Year	ME	MA	RI	CT	NY	NJ	MD	VA	NC	Total
1979		782	3,123	92	1,422	2,159	21	397	589	8,585
1980	1	706	2,934	17	1,294	2,310	32	531	599	8,424
1981		523	2,959	44	1,595	2,990	9	1,054	682	9,856
1982		545	3,203	25	1,473	1,746	2	1,042	668	8,704
1983		672	2,583	49	1,103	2,536	13	536	302	7,794
1984		540	2,919	32	904	2,217	6	673	478	7,769
1985		387	3,583	41	861	1,493	17	74	271	6,727
1986		875	2,987	67	893	1,895	14	273	172	7,176
1987	5	735	2,162	301	911	1,817		232	113	6,276
1988	9	536	2,832	359	687	1,334	1	127	58	5,943
1989	32	579	1,401	89	603	1,219	1	45	15	3,984
1990	4	696	1,786	165	755	1,005	4	75	81	4,571
1991	16	553	2,902	287	1,223	1,960	15	56	69	7,081
1992		655	2,676	193	1,043	1,475	17	73	127	6,259
1993		556	1,332	148	729	1,822	10	76	53	4,726
1994		354	1,514	142	688	1,456	7	92	139	4,392
1995		310	1,045	90	511	1,084	2	20	11	3,073
1996		436	773	99	377	1,141	20	72	27	2,945
1997		676	486	50	376	596	1	2	1	2,188
1998		435	361	44	282	758	5	4	7	1,896
1999		300	581	44	206	361		13		1,505
2000		161	461	65	287	232		1		1,207
2001		149	734	45	297	479	1	24		1,729
2002		330	1,668	4	714	419		25	13	3,173
2003		407	1,730	64	839	1,033	21	253	58	4,405
2004		353	1,562	116	865	862	21	203	249	4,231
2005		515	1,553	149	989	880	1	130	50	4,266
2006		493	1,653	135	1,096	632	0	36	17	4,062
2007		501	1,785	118	1,054	714	1	10	13	4,196
2008		239	977	127	551	351	3	44	60	2,351
2009		326	1,641	90	839	693	1	110	16	3,717
2010		458	1,950	281	1,220	703	9	188	46	4,855

Table 2. Total landings (mt) of scup from Maine through North Carolina. Landings include revised Massachusetts commercial landings for 1986-1997.

Year	Commercial Landings	Recreational Landings
1981	9,856	2,636
1982	8,704	2,361
1983	7,794	2,836
1984	7,769	1,096
1985	6,727	2,764
1986	7,176	5,264
1987	6,276	2,811
1988	5,943	1,936
1989	3,984	2,521
1990	4,571	1,878
1991	7,081	3,668
1992	6,259	2,001
1993	4,726	1,450
1994	4,392	1,192
1995	3,073	609
1996	2,945	978
1997	2,188	543
1998	1,896	397
1999	1,505	856
2000	1,207	2,469
2001	1,729	1,933
2002	3,173	1,644
2003	4,405	3,848
2004	4,231	1,923
2005	4,266	1,153
2006	4,062	1,331
2007	4,196	1,655
2008	2,351	1,834
2009	3,717	1,334
2010	4,855	2,605

Table 3. NEFSC spring and fall trawl survey indices for scup. Strata set includes only offshore strata 1-12, 23, 25 and 61-76 for consistency over entire time series. Fall strata set excludes inshore strata 1-61 that are included in the 1984 and later indices at age.

Year	Spring N/tow	Spring Kg/tow	Fall N/tow	Fall Kg/tow
1963			2.12	1.21
1964			118.70	2.23
1965			3.84	0.62
1966			2.00	0.41
1967			29.38	1.46
1968	59.21	2.25	14.35	0.54
1969	2.26	0.40	99.41	4.48
1970	78.50	3.01	10.34	0.22
1971	70.91	2.41	7.730	0.25
1972	49.80	2.30	40.56	2.34
1973	3.62	1.19	22.82	0.93
1974	30.28	3.24	9.94	1.01
1975	14.01	3.12	52.21	3.40
1976	4.09	0.63	161.14	7.35
1977	42.46	4.48	32.69	1.71
1978	39.85	3.49	12.17	1.32
1979	22.42	1.95	15.77	0.61
1980	9.31	1.31	11.05	0.92
1981	14.72	1.16	67.14	3.01
1982	7.88	1.16	25.47	1.17
1983	0.80	0.29	4.59	0.34
1984	8.52	0.51	24.03	1.22
1985	14.67	0.80	68.30	3.56
1986	11.74	1.30	46.19	1.66
1987	10.82	1.21	5.76	0.15
1988	25.41	1.26	5.75	0.09
1989	1.63	0.12	94.05	3.37
1990	1.17	0.39	16.53	0.83
1991	12.61	0.75	9.52	0.43
1992	6.79	0.40	16.19	1.12
1993	2.93	0.33	0.43	0.04
1994	1.54	0.09	3.59	0.11
1995	2.90	0.22	24.72	0.91
1996	0.53	0.03	4.46	0.23
1997	0.91	0.11	16.92	0.88
1998	40.04	0.87	25.35	0.69
1999	1.70	0.12	85.23	2.07
2000	6.71	0.33	99.33	4.79
2001	13.03	0.80	20.28	1.11
2002	154.86	13.46	95.62	3.79
2003	6.01	0.28	28.18	0.80
2004	57.58	2.84	10.38	0.27
2005	19.22	0.55	4.50	0.07
2006	5.71	2.10	96.41	1.92
2007	10.60	0.36	41.52	2.21
2008	9.68	1.44	38.49	1.38

Table 4. NEFSC spring and fall trawl survey indices for scup. Strata set includes only offshore strata 1-12, 23, 25 and 61-76 for consistency over entire time series. FSV *Bigelow* (HBB) and calibrated indices for the FSV *Albatross IV* (ALB) time series. The spring catch number calibration factor is 1.371; the catch weight factor is 0.701. The fall catch number calibration factor is 1.740; the catch weight factor is 1.438.

Year	Spring N/tow HBB	Spring Kg/tow HBB	Spring N/tow ALB	Spring Kg/tow ALB
2009	11.98	0.99	8.74	1.42
2010	31.82	4.62	23.21	6.59
2011	26.67	0.92	19.45	1.31

Year	Fall N/tow HBB	Fall Kg/tow HBB	Fall N/tow ALB	Fall Kg/tow ALB
2009	160.99	3.85	92.52	2.68
2010	75.13	8.23	43.18	5.72

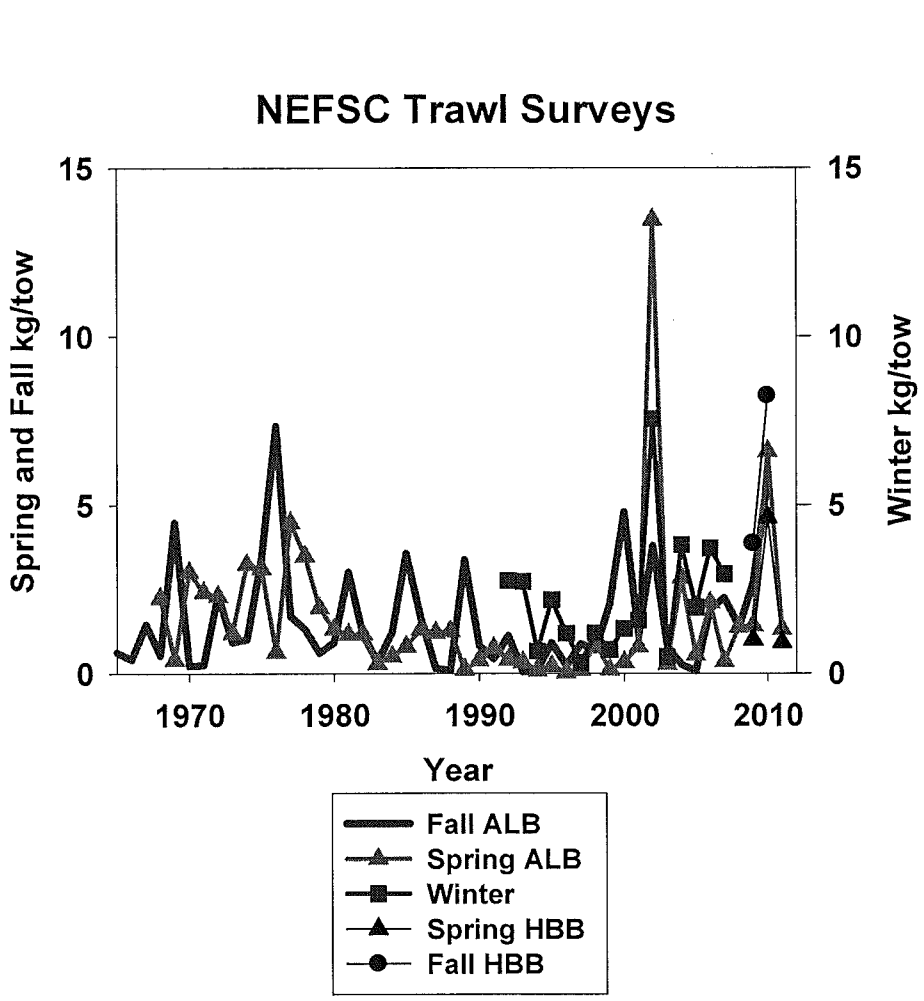

Figure 1. NEFSC trawl survey indices for scup = from the Winter, Spring and Fall series. HBB indices have been converted to ALB equivalents for 2009-2010 using aggregate calibration factors (see Table 4).

Table 5. Projections for 2010-2012: Projections are made from the 2009 estimated stock sizes from the 2010 assessment update; the projected recruitment was drawn from the distribution of 1984-2009 recruitment estimates (NEFSC 2010 CRD 10-16).

Commercial fishery landings in 2010 were 4,855 mt (10.7 million lbs); recreational landings were 2,605 mt (5.7 million lbs); total landings were 7,460 mt (16.4 million lbs). Projections indicate associated discards in 2010 of 1,718 mt (3.8 million lbs), a median (50% probability) fishing mortality in 2010 of F = 0.053, and median SSB in 2010 of 178,995 mt, above the biomass target of SSBMSY = SSB40% = 92,044 mt.

If the landings in 2011 equal the proposed TAL = 12,020 mt (26.5 million lbs), the 2011 discards are projected to be 2,459 mt (5.4 million lbs), with median F in 2011 = 0.081 and a median SSB in 2011 of 187,861 mt, above the biomass target of SSBMSY = SSB35% = 92,044 mt.

Fishing at Ftarget = 0.133 during 2012 is projected to maintain the stock above SSBMSY = SSB40% = 92,044 mt. The projections indicate that fishing at Ftarget = 0.133 in 2012 could provide median landings in 2012 (19,418 mt = 42.8 million lbs) that exceed the MSY landings (13.134 mt = 29.0 million lbs).

Landings, Discards, and Spawning Stock Biomass (SSB)
in metric tons

	2010	2011	2012
Landings	7,460	12,020	19,418
Discards	1,718	2,459	3,459
SSB	178,995	187,861	183,324
F	0.053	0.061	0.133

AGEPRO VERSION 3.3

PROJECTION RUN: Scup 2011 Projection Update: Revised 2011 TAL; 2012 = 0.75*Fthre

INPUT FILE: H:\NFTDATA\SCUP\ASAP\S2010\PRO_2011_F133_V2.IN

OUTPUT FILE: H:\NFTDATA\SCUP\ASAP\S2010\PRO_2011_F133_V2.OUT

NUMBER OF SIMULATIONS PER BOOTSTRAP REALIZATION: 100
TOTAL NUMBER OF SIMULATIONS: 100000
NUMBER OF FEASIBLE SIMULATIONS: 100000
PROPORTION OF SIMULATIONS THAT ARE FEASIBLE: 1.00000000000000
NUMBER OF BOOTSTRAP REALIZATIONS: 1000

NUMBER OF RECRUITMENT MODELS: 1
PROBABLE RECRUITMENT MODELS: 14
RECRUITMENT MODELS BY YEAR

YEAR	RECRUITMENT MODELS
2010	14
2011	14
2012	14
2013	14
2014	14

RECRUITMENT MODEL PROBABILITIES BY YEAR

YEAR	MODEL PROBABILITY
2010	1.00000000000000
2011	1.00000000000000
2012	1.00000000000000
2013	1.00000000000000
2014	1.00000000000000

RECRUITMENT MODEL SAMPLING FREQUENCIES BY YEAR

YEAR	MODEL SAMPLING FREQUENCIES
2010	100000
2011	100000
2012	100000
2013	100000
2014	100000

MIXTURE OF F AND QUOTA BASED CATCHES

YEAR	F	QUOTA (THOUSAND MT)
2010		7.460
2011		12.020
2012	0.133	
2013	0.133	
2014	0.133	

SPAWNING STOCK BIOMASS (THOUSAND MT)

YEAR	AVG SSB (000 MT)	STD
2010	178.195	11.319
2011	187.404	11.917
2012	183.223	11.827
2013	170.615	10.874
2014	157.928	10.992

PERCENTILES OF SPAWNING STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	150.612	158.212	162.949	171.444	178.995	185.326	191.623	195.846	205.628
2011	159.333	167.080	171.902	180.234	187.861	194.887	201.638	206.230	216.269
2012	156.360	163.772	167.752	175.469	183.324	190.953	197.979	201.923	214.126
2013	145.743	152.905	156.843	163.333	170.476	177.680	184.348	188.678	197.947
2014	133.648	140.253	143.976	150.337	157.690	165.249	172.149	176.413	184.621

ANNUAL PROBABILITY THAT SSB EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(SSB >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000
2013	1.000
2014	1.000

Pr(SSB >= Threshold Value) AT LEAST ONCE:= 1.000

MEAN BIOMASS (THOUSAND MT) FOR AGES: 1 TO 8

YEAR	AVG MEAN B (000 MT)	STD
2010	195.589	11.941
2011	200.522	12.492
2012	194.128	12.293
2013	181.430	11.827
2014	168.763	12.011

PERCENTILES OF MEAN STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	167.199	174.784	179.820	188.220	196.261	203.164	209.666	214.341	225.059
2011	171.221	179.562	184.127	192.567	200.894	208.579	215.755	220.374	231.924
2012	165.455	173.870	178.378	186.026	194.151	202.117	209.353	214.236	225.186
2013	154.691	162.243	166.390	173.394	181.305	189.240	196.544	201.155	210.218
2014	142.078	149.341	153.509	160.460	168.523	176.817	184.374	188.886	197.615

ANNUAL PROBABILITY THAT MEAN BIOMASS EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(MEAN B >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000

2013	1.000
2014	1.000

Pr(MEAN B >= Threshold Value) AT LEAST ONCE:= 1.000

F WEIGHTED BY MEAN BIOMASS FOR AGES: 1 TO 8

YEAR	AVG F_WT_B	STD
2010	0.047	0.003
2011	0.073	0.005
2012	0.118	0.001
2013	0.118	0.001
2014	0.118	0.001

PERCENTILES OF F WEIGHTED BY MEAN BIOMASS FOR AGES: 1 TO 8

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	0.040	0.043	0.044	0.045	0.047	0.049	0.051	0.053	0.056
2011	0.062	0.066	0.067	0.069	0.072	0.075	0.079	0.081	0.085
2012	0.116	0.116	0.117	0.117	0.118	0.118	0.119	0.119	0.120
2013	0.115	0.116	0.116	0.117	0.118	0.118	0.119	0.119	0.120
2014	0.115	0.116	0.116	0.117	0.118	0.118	0.119	0.119	0.120

ANNUAL PROBABILITY THAT F WEIGHTED BY MEAN BIOMASS EXCEEDS THRESHOLD: 0.177

YEAR	Pr(F_WT_B > Threshold Value) FOR FEASIBLE SIMULATIONS
2010	0.000
2011	0.000
2012	0.000
2013	0.000
2014	0.000

TOTAL STOCK BIOMASS (THOUSAND MT)

YEAR	AVG TOTAL B (000 MT)	STD
2010	189.973	11.697
2011	200.244	12.258
2012	200.681	12.799
2013	188.682	11.876
2014	175.455	11.683

PERCENTILES OF TOTAL STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	161.840	169.217	174.199	182.930	190.712	197.371	203.931	208.351	217.714
2011	171.350	179.276	184.090	192.764	200.826	208.098	214.848	219.636	230.256
2012	170.359	179.465	184.010	192.379	200.907	208.908	216.340	221.226	233.221
2013	161.308	169.268	173.531	180.766	188.631	196.475	203.616	208.275	218.281
2014	149.231	156.549	160.633	167.449	175.265	183.251	190.489	195.003	203.762

ANNUAL PROBABILITY THAT TOTAL STOCK BIOMASS EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(B >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000
2013	1.000
2014	1.000

Pr(B >= Threshold Value) AT LEAST ONCE:= 1.000

RECRUITMENT UNITS ARE: 1000.00000000000 FISH

YEAR CLASS	AVG RECRUITMENT	STD
2010	103422.308	45054.987
2011	103293.799	45008.328
2012	102931.421	45130.122
2013	103341.669	44987.647
2014	103426.855	44966.805

PERCENTILES OF RECRUITMENT UNITS ARE: 1000.00000000000 FISH

YEAR CLASS	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	24930.414	37107.372	41490.320	67487.060	102926.699	141128.739	163532.608	179311.322	201051.450
2011	24952.478	37105.928	41606.892	67483.080	102821.320	141080.846	163535.808	179561.992	200803.273
2012	24984.916	36751.535	41358.384	66870.729	102646.974	141037.610	163506.674	179312.681	200934.347
2013	24732.097	37157.459	41545.602	67268.555	102915.505	141049.330	163503.128	179190.064	201066.246
2014	25266.953	37161.201	41591.734	67795.582	102938.628	141127.878	163534.016	178922.993	200966.311

LANDINGS (000 MT)

YEAR	AVG LANDINGS (000 MT)	STD
2010	7.460	0.000
2011	12.020	0.000
2012	19.396	1.250
2013	18.094	1.146
2014	16.666	1.123

PERCENTILES OF LANDINGS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	7.460	7.460	7.460	7.460	7.460	7.460	7.460	7.460	7.460
2011	12.020	12.020	12.020	12.020	12.020	12.020	12.020	12.020	12.020
2012	16.468	17.325	17.765	18.588	19.418	20.201	20.935	21.412	22.715
2013	15.462	16.239	16.642	17.331	18.066	18.841	19.543	20.012	21.041
2014	14.190	14.868	15.248	15.893	16.638	17.407	18.122	18.566	19.430

DISCARDS (000 MT)

YEAR	AVG DISCARDS (000 MT)	STD
2010	1.726	0.097
2011	2.473	0.171

2012	3.468	0.306
2013	3.256	0.486
2014	3.167	0.509

PERCENTILES OF DISCARDS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	1.538	1.577	1.608	1.659	1.718	1.786	1.857	1.905	1.975
2011	2.151	2.219	2.265	2.347	2.459	2.581	2.703	2.779	2.920
2012	2.831	2.985	3.077	3.244	3.459	3.683	3.871	3.983	4.187
2013	2.275	2.483	2.624	2.890	3.245	3.605	3.910	4.073	4.357
2014	2.111	2.355	2.507	2.794	3.153	3.527	3.849	4.024	4.331

CATCH BIOMASS (000 MT)

YEAR	AVG CATCH (000 MT)	STD
2010	9.186	0.097
2011	14.493	0.171
2012	22.864	1.443
2013	21.350	1.413
2014	19.833	1.438

PERCENTILES OF CATCH BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	8.998	9.037	9.068	9.119	9.178	9.246	9.317	9.365	9.435
2011	14.171	14.239	14.285	14.367	14.479	14.601	14.723	14.799	14.940
2012	19.479	20.507	21.000	21.918	22.866	23.802	24.652	25.214	26.583
2013	18.162	19.060	19.554	20.387	21.331	22.283	23.161	23.716	24.793
2014	16.654	17.508	18.003	18.837	19.805	20.799	21.698	22.250	23.273

REALIZED F SERIES

YEAR	AVG F	STD
2010	0.053	0.004
2011	0.081	0.005
2012	0.133	0.000
2013	0.133	0.000
2014	0.133	0.000

PERCENTILES OF REALIZED F SERIES

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	0.046	0.048	0.049	0.051	0.053	0.055	0.058	0.060	0.063
2011	0.070	0.074	0.075	0.078	0.081	0.084	0.089	0.091	0.096
2012	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
2013	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
2014	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133

ANNUAL PROBABILITY FULLY-RECRUITED F EXCEEDS THRESHOLD: 0.177

YEAR	Pr(F > Threshold Value) FOR FEASIBLE SIMULATIONS
2010	0.000
2011	0.000

2012	0.000
2013	0.000
2014	0.000

AGEPRO VERSION 3.3

PROJECTION RUN: Scup 2011 Projection Update: Revised 2011 TAL; 2012 = FMSY = 0.1

INPUT FILE: H:\NFTDATA\SCUP\ASAP\S2010\PRO_2011_F177_V2.IN

OUTPUT FILE: H:\NFTDATA\SCUP\ASAP\S2010\PRO_2011_F177_V2.OUT

NUMBER OF SIMULATIONS PER BOOTSTRAP REALIZATION: 100
TOTAL NUMBER OF SIMULATIONS: 100000
NUMBER OF FEASIBLE SIMULATIONS: 100000
PROPORTION OF SIMULATIONS THAT ARE FEASIBLE: 1.00000000000000
NUMBER OF BOOTSTRAP REALIZATIONS: 1000

NUMBER OF RECRUITMENT MODELS: 1
PROBABLE RECRUITMENT MODELS: 14
RECRUITMENT MODELS BY YEAR

YEAR	RECRUITMENT MODELS
2010	14
2011	14
2012	14
2013	14
2014	14

RECRUITMENT MODEL PROBABILITIES BY YEAR

YEAR	MODEL PROBABILITY
2010	1.00000000000000
2011	1.00000000000000
2012	1.00000000000000
2013	1.00000000000000
2014	1.00000000000000

RECRUITMENT MODEL SAMPLING FREQUENCIES BY YEAR

YEAR	MODEL SAMPLING FREQUENCIES
2010	100000
2011	100000
2012	100000
2013	100000
2014	100000

MIXTURE OF F AND QUOTA BASED CATCHES

YEAR	F	QUOTA (THOUSAND MT)
2010		7.460
2011		12.020
2012	0.177	
2013	0.177	
2014	0.177	

SPAWNING STOCK BIOMASS (THOUSAND MT)

YEAR	AVG SSB (000 MT)	STD
2010	178.195	11.319
2011	187.404	11.917
2012	180.209	11.633
2013	161.370	10.293
2014	143.956	10.063

PERCENTILES OF SPAWNING STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	150.612	158.212	162.949	171.444	178.995	185.326	191.623	195.846	205.628
2011	159.333	167.080	171.902	180.234	187.861	194.887	201.638	206.230	216.269
2012	153.785	161.080	164.992	172.583	180.309	187.814	194.723	198.601	210.607
2013	137.815	144.611	148.324	154.479	161.235	168.061	174.373	178.471	187.226
2014	121.741	127.773	131.185	137.006	143.741	150.666	156.978	160.895	168.336

ANNUAL PROBABILITY THAT SSB EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(SSB >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000
2013	1.000
2014	1.000

Pr(SSB >= Threshold Value) AT LEAST ONCE:= 1.000

MEAN BIOMASS (THOUSAND MT) FOR AGES: 1 TO 8

YEAR	AVG MEAN B (000 MT)	STD
2010	195.589	11.941
2011	200.522	12.492
2012	190.592	12.071
2013	171.619	11.216
2014	154.289	11.071

PERCENTILES OF MEAN STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	167.199	174.784	179.820	188.220	196.261	203.164	209.666	214.341	225.059
2011	171.221	179.562	184.127	192.567	200.894	208.579	215.755	220.374	231.924
2012	162.426	170.699	175.120	182.641	190.618	198.436	205.548	210.334	221.085
2013	146.256	153.424	157.350	164.001	171.493	179.027	185.962	190.308	198.963
2014	129.689	136.380	140.212	146.633	154.070	161.720	168.683	172.841	180.841

ANNUAL PROBABILITY THAT MEAN BIOMASS EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(MEAN B >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000

2013	1.000
2014	1.000

Pr(MEAN B >= Threshold Value) AT LEAST ONCE:= 1.000

F WEIGHTED BY MEAN BIOMASS FOR AGES: 1 TO 8

YEAR	AVG F_WT_B	STD
2010	0.047	0.003
2011	0.073	0.005
2012	0.157	0.001
2013	0.156	0.001
2014	0.156	0.002

PERCENTILES OF F WEIGHTED BY MEAN BIOMASS FOR AGES: 1 TO 8

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	0.040	0.043	0.044	0.045	0.047	0.049	0.051	0.053	0.056
2011	0.062	0.066	0.067	0.069	0.072	0.075	0.079	0.081	0.085
2012	0.154	0.155	0.155	0.156	0.157	0.158	0.158	0.159	0.159
2013	0.153	0.154	0.155	0.155	0.156	0.157	0.158	0.159	0.159
2014	0.152	0.153	0.154	0.155	0.156	0.157	0.158	0.159	0.159

ANNUAL PROBABILITY THAT F WEIGHTED BY MEAN BIOMASS EXCEEDS THRESHOLD: 0.177

YEAR	Pr(F_WT_B > Threshold Value) FOR FEASIBLE SIMULATIONS
2010	0.000
2011	0.000
2012	0.000
2013	0.000
2014	0.000

TOTAL STOCK BIOMASS (THOUSAND MT)

YEAR	AVG TOTAL B (000 MT)	STD
2010	189.973	11.697
2011	200.244	12.258
2012	200.681	12.799
2013	181.611	11.440
2014	162.931	10.892

PERCENTILES OF TOTAL STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	161.840	169.217	174.199	182.930	190.712	197.371	203.931	208.351	217.714
2011	171.350	179.276	184.090	192.764	200.826	208.098	214.848	219.636	230.256
2012	170.359	179.465	184.010	192.379	200.907	208.908	216.340	221.226	233.221
2013	155.234	162.928	167.015	173.990	181.564	189.125	196.001	200.486	210.098
2014	138.524	145.300	149.099	155.457	162.747	170.201	176.956	181.150	189.305

ANNUAL PROBABILITY THAT TOTAL STOCK BIOMASS EXCEEDS THRESHOLD: 92.044 THOUSAND MT

YEAR	Pr(B >= Threshold Value) FOR FEASIBLE SIMULATIONS
2010	1.000
2011	1.000
2012	1.000
2013	1.000
2014	1.000

Pr(B >= Threshold Value) AT LEAST ONCE:= 1.000

RECRUITMENT UNITS ARE: 1000.00000000000 FISH

YEAR CLASS	AVG RECRUITMENT	STD
2010	103422.308	45054.987
2011	103293.799	45008.328
2012	102931.421	45130.122
2013	103341.669	44987.647
2014	103426.855	44966.805

PERCENTILES OF RECRUITMENT UNITS ARE: 1000.00000000000 FISH

YEAR CLASS	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	24930.414	37107.372	41490.320	67487.060	102926.699	141128.739	163532.608	179311.322	201051.450
2011	24952.478	37105.928	41606.892	67483.080	102821.320	141080.846	163535.808	179561.992	200803.273
2012	24984.916	36751.535	41358.384	66870.729	102646.974	141037.610	163506.674	179312.681	200934.347
2013	24732.097	37157.459	41545.602	67268.555	102915.505	141049.330	163503.128	179190.064	201066.246
2014	25266.953	37161.201	41591.734	67795.582	102938.628	141127.878	163534.016	178922.993	200966.311

LANDINGS (000 MT)

YEAR	AVG LANDINGS (000 MT)	STD
2010	7.460	0.000
2011	12.020	0.000
2012	25.333	1.633
2013	22.719	1.440
2014	20.150	1.362

PERCENTILES OF LANDINGS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	7.460	7.460	7.460	7.460	7.460	7.460	7.460	7.460	7.460
2011	12.020	12.020	12.020	12.020	12.020	12.020	12.020	12.020	12.020
2012	21.509	22.628	23.203	24.279	25.362	26.384	27.343	27.967	29.668
2013	19.416	20.387	20.895	21.761	22.685	23.657	24.538	25.128	26.419
2014	17.152	17.969	18.431	19.214	20.117	21.050	21.917	22.454	23.500

DISCARDS (000 MT)

YEAR	AVG DISCARDS (000 MT)	STD
2010	1.726	0.097
2011	2.473	0.171

2012	4.534	0.401
2013	4.130	0.621
2014	3.935	0.643

PERCENTILES OF DISCARDS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	1.538	1.577	1.608	1.659	1.718	1.786	1.857	1.905	1.975
2011	2.151	2.219	2.265	2.347	2.459	2.581	2.703	2.779	2.920
2012	3.698	3.900	4.021	4.240	4.521	4.815	5.062	5.209	5.475
2013	2.876	3.141	3.322	3.663	4.116	4.575	4.965	5.175	5.540
2014	2.602	2.909	3.101	3.465	3.916	4.388	4.795	5.018	5.404

CATCH BIOMASS (000 MT)

YEAR	AVG CATCH (000 MT)	STD
2010	9.186	0.097
2011	14.493	0.171
2012	29.867	1.886
2013	26.849	1.781
2014	24.085	1.760

PERCENTILES OF CATCH BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	8.998	9.037	9.068	9.119	9.178	9.246	9.317	9.365	9.435
2011	14.171	14.239	14.285	14.367	14.479	14.601	14.723	14.799	14.940
2012	25.446	26.788	27.432	28.631	29.868	31.092	32.202	32.937	34.725
2013	22.831	23.964	24.586	25.635	26.827	28.026	29.134	29.832	31.187
2014	20.192	21.236	21.842	22.866	24.052	25.269	26.368	27.043	28.294

REALIZED F SERIES

YEAR	AVG F	STD
2010	0.053	0.004
2011	0.081	0.005
2012	0.177	0.000
2013	0.177	0.000
2014	0.177	0.000

PERCENTILES OF REALIZED F SERIES

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	0.046	0.048	0.049	0.051	0.053	0.055	0.058	0.060	0.063
2011	0.070	0.074	0.075	0.078	0.081	0.084	0.089	0.091	0.096
2012	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177
2013	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177
2014	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177

ANNUAL PROBABILITY FULLY-RECRUITED F EXCEEDS THRESHOLD: 0.177

YEAR	Pr(F > Threshold Value) FOR FEASIBLE SIMULATIONS
2010	0.000
2011	0.000

2012	0.000
2013	0.000
2014	0.000