MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901-3910
Phone: 302-674-2331 | Toll Free: 877-446-2362 | FAX: 302-674-5399 | www.mafmc.org
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: Summer Flounder Management Measures for 2013 and 2014

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

1) Summary of Monitoring Committee Recommendations

2) Report of the July Meeting of the Council's Science and Statistical Committee

3) Staff Recommendation Memo

4) Memo from North Carolina Division of Marine Fisheries on Flynet Fishery

5) Stock Assessment of Summer Flounder for 2012

6) Stock Assessment Projections

7) Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports

8) Summer Flounder Advisory Panel Information Document

Summer Flounder, Scup, and Black Sea Bass Monitoring Committee

Meetings Summary

July 27, 2012

Attendees: Paul Caruso (MA-DMF), Jason McNamee (RI-DFW), Mark Terceiro (NEFSC), Mike Celestino (NJ-F&W), Greg Wojcik (CT-DEEP), Allison Watts (VMRC), Rich Wong (DNREC), Steve Doctor (MD-DNR), Moira Kelly (NERO), John Maniscalco (NY-DEC), Jessica Coakley (Council Staff), Kiley Dancy (Council Staff), Lee Anderson (Council vice-chair), Toni Kerns (ASMFC), Adam Nowalsky (RFA), Jeff Kaelin (Lunds Fisheries), Kirk Gotchell (CT-DEP)

Summer Flounder Monitoring Committee Recommendations

Comments and Consensus Recommendations: The variability in the recreational data is already being accounted for in the assessment model; therefore, proportional standard errors (PSEs) should not be used as the basis to set the annual catch targets (ACTs) less than the annual catch limits (ACLs). The performance of the recreational fishery in recent years has resulted in substantial underharvest. The discards in the commercial fishery have been relatively low, and the landings monitoring and fishery closure system is timely. Additional work is being conducted to reevaluate the estimation of commercial discards. No additional reduction is needed from the commercial and recreational ACLs to the ACTs to address management uncertainty.

Because the current stock size is less than SSB_{MSY}, and there is interest in stability for the fisheries, measures could be set at the lower of the two 2013/2014 ABC=ACLs=ACTs recommendations. However, there is little difference between the 2013 and 2014 recommendations for ABC (45 mt). Fishing at the SSC recommended ABCs for 2013 and 2014 (10,133 mt and 10,088 mt, respectively) should enable the stock to grow to B_{MSY} as a result of the low constant F associated with the Council risk policy. The Committee agreed with the staff recommendations for commercial fishery measures and RSA.

Scup Monitoring Committee Recommendations

Comments and Consensus Recommendations: The variability in the recreational data is already being accounted for in the assessment model; therefore, PSEs should not be used as the basis to set the ACTs less than the ACLs. The performance of the recreational fishery in the recent year has resulted in substantial underharvest in response to the increased harvest limit; however, prior year overages were substantial. The commercial scup fishery has underperformed in the last few years. No additional reduction is needed from the respective commercial and recreational ACLs to the ACTs to address management uncertainty.

Because there is interest in stability for the fisheries, measures could be set at the lower of the three 2013-2015 ABC=ACLs=ACTs recommendations. However, fishing at the SSC recommended ABCs for 2013-2015 (17,557 mt, 16,325 mt, 15,320 mt, respectively) should

enable the stock to remain high as a result of the low constant fishing mortality (F) associated with the Council risk policy.

The commercial quota has been underutilized the last four years. The Council could consider adjustments to possession limits and minimum fish size to achieve the commercial quota. In terms of the 9 inch minimum fish size, a reduction to 8 inches would not be expected to result in considerable impact on the assessment and spawning capacity given many of the 8 inch fish are already selected into the fishery as discards, and commercial discard mortality is assumed to be 100% for the trawl fishery. This is conditioned on the current fishery data assuming trawl gear use (mesh size) and seasonality are the same. There are very limited data on discards in the pot/trap and hook and line fishery to characterize how a reduction to 8 inches would affect the fishery selectivity. The Council should consider the winter I possession limit in terms of the effects on small vessels versus large vessels (during the various seasons), as well as the recreational fishery. Under the current stock size, high possession limits (i.e. >50,000 lb) may not result in rapid attainment of the quota, but as the stock size decreases and quota decreases, a high possession limit may no longer be appropriate. 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, triggers, and minimum size simultaneously), 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. The Committee agreed with the other staff recommendations for the commercial fishery and RSA.

Black Sea Bass Monitoring Committee Recommendations

Comments and Consensus Recommendations: No additional reduction is needed from the respective commercial and recreational ACLs to the ACTs to address management uncertainty. The constant catch approach adequately addresses both scientific and management uncertainty. Last year, the increasing trend in recreational discards versus the projected discards resulted in a recommendation for a lower ACT. However, there was a recent overall decline in discards in the updated assessment; therefore, an ACT adjustment is not recommended for 2013. In addition, the commercial quota monitoring system is timely and results in minimal reported overages. The Committee agreed with the other staff recommendations for the commercial fishery and RSA.

Table A. Summary of the SSC and Monitoring Committee for commercial and recreational catch and landings limits summer flounder, scup, and black sea bass recommendations in 2013, 2014, and 2015 (million lb) compared to 2012 measures.

Resource	Year	ABC[1]	Comm. ACL[2]	Rec. ACL[2]	Comm. ACT[3]	Rec. ACT[3]	Comm. Quota[4]	Rec. Harvest Limit[4]
Summer Flounder	**2012 (current)**	**25.58 mil lb** (11,603 mt)	**14.00 mil lb** (6,351 mt)	**11.58 mil lb** (5,252 mt)	**14.00 mil lb** (6,351 mt)	**11.58 mil lb** (5,252 mt)	**12.73 mil lb** (5,774 mt)	**8.49 mil lb** (3,850 mt)
	2013	**22.34 mil lb** (10,133 mt)	**12.11 mil lb** (5,491 mt)	**10.23 mil lb** (4,642mt)	**12.11 mil lb** (5,491 mt)	**10.23 mil lb** (4,642mt)	**11.44 mil lb** (5,189 mt)	**7.63 mil lb** (3,459 mt)
	2014	**22.24 mil lb** (10,088 mt)	**12.05 mil lb** (5,467 mt)	**10.19 mil lb** (4,621 mt)	**12.05 mil lb** (5,467 mt)	**10.19 mil lb** (4,621 mt)	**11.39 mil lb** (5,166 mt)	**7.59 mil lb** (3,444 mt)
Scup	**2012 (current)**	**40.88 mil lb** (18,543 mt)	**31.89 mil lb** (14,464 mt)	**8.99 mil lb** (4,079 mt)	**31.89 mil lb** (14,464 mt)	**8.99 mil lb** (4,079 mt)	**27.91 mil lb** (12,659 mt)	**8.45 mil lb** (3,831 mt)
	2013	**38.71 mil lb** (17,557 mt)	**30.19 mil lb** (13,694 mt)	**8.52 mil lb** (3,863 mt)	**30.19 mil lb** (13,694 mt)	**8.52 mil lb** (3,863 mt)	**23.53 mil lb** (10,671 mt)	**7.55 mil lb** (3,425 mt)
	2014	**35.99 mil lb** (16,325 mt)	**28.07 mil lb** (12,734 mt)	**7.92 mil lb** (3,592 mt)	**28.07 mil lb** (12,734 mt)	**7.92 mil lb** (3,592 mt)	**21.95 mil lb** (9,955 mt)	**7.03 mil lb** (3,188 mt)
	2015	**33.78 mil lb** (15,320 mt)	**26.34 mil lb** (11,950 mt)	**7.43 mil lb** (3,370 mt)	**26.34 mil lb** (11,950 mt)	**7.43 mil lb** (3,370 mt)	**20.60 mil lb** (9,342 mt)	**6.60 mil lb** (2,992 mt)
Black Sea Bass	**2012 (current)**	**4.50 mil lb** (2,041 mt)	**1.98 mil lb** (898 mt)	**2.52 mil lb** (1,143 mt)	**1.98 mil lb** (898 mt)	**1.86 mil lb** (844 mt)	**1.71 mil lb** (774 mt)	**1.32 mil lb** (598 mt)
	2013	**4.50 mil lb** (2,041 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**1.78 mil lb** (805 mt)	**1.85 mil lb** (838 mt)
	2014	**4.50 mil lb** (2,041 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**1.78 mil lb** (805 mt)	**1.85 mil lb** (838 mt)
	2015	**4.50 mil lb** (2,041 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**2.13 mil lb** (966 mt)	**2.37 mil lb** (1,075 mt)	**1.78 mil lb** (805 mt)	**1.85 mil lb** (838 mt)

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

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Richard B. Robins, Jr.
Chairman

Lee G. Anderson
Vice-Chairman

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

Christopher M. Moore, Ph.D.
Executive Director

M E M O R A N D U M

DATE: 30 July 2012

TO: Richard B. Robins, Jr., Chairman, Mid-Atlantic Fishery Management Council

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

Subject: Report of July 2012 Meeting of the MAFMC Scientific and Statistical Committee

The Scientific and Statistical Committee (SSC) of the Mid-Atlantic Fishery Management Council (MAFMC) met on 25-25 July 2012 to review stock assessment information and develop acceptable biological catch (ABC) recommendations for four species under the management purview of the MAFMC: black sea bass, summer flounder, scup, and bluefish (Attachment 1). The SSC also discussed the 2012 RSA project selection process.

A total of 15 SSC members were in attendance on July 25th and 14 SSC members on July 26th, which represented a quorum for each day as defined by the SSC standard operating procedures (Attachment 2). Also in attendance were representatives of the MAFMC, MAFMC staff, state biologists, and the public.

For each of the four species, MAFMC staff described the assessment history, the most recent survey and landings information, and comments from the Advisory Panel and Monitoring Committee. Scientists from the NEFSC were then asked to comment, followed by the SSC species lead on biology, the SSC species lead on socioeconomics, and members of the MAFMC/ASMFC Monitoring Committee. The public was then invited to comment. The SSC species lead for biology led the SSC discussion on selection of an ABC for the 2013 fishing year and beyond. Once the discussion was completed, the SSC provided the following consensus statements in response to the terms of reference provided by the MAFMC. All supporting materials are posted on the SSC's website.

Black Sea Bass

1) The materials considered in reaching its recommendations:

- Shepherd, Gary R. 2012. Black sea bass assessment summary for 2012 . Northeast Fisheries Science Center. 24pp.
- MAFMC Staff Report: Black sea bass AP information document, dated June 2012 15pp.
- Mid-Atlantic Fishery Management Council. 2012. Summer flounder, scup, and black sea bass fishery performance reports. 9pp.
- MAFMC staff memorandum from Jessica Coakley to Chris Moore, "Black sea bass management measures for 2013, 2014, 2015" dated July 23, 2012. 8pp.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the version of the proposed Omnibus Amendment submitted to the Secretary of Commerce:

The SSC determined that the black sea bass assessment qualified as a **Level 4**. The determination of Level 4 status involves concerns regarding: (i) the absence of important biological information in the assessment (e.g., potential for incomplete mixing in the stock area); (ii) whether reference points are appropriate given the life history; and (iii) that, although point estimates of reference points were provided, the reliability of the OFL point estimate was uncertain.

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

The assessment indicates that the catch associated with OFL is **3,175 mt** based on an F_{msy} proxy = $F_{40\%}$ = 0.44. However, the SSC did not endorse these estimates because of concerns about the unresolved uncertainty in the OFL related to stock mixing, life history, and natural mortality that remain unresolved in the assessment.

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock:

The SSC did not accept the OFL in the assessment. Rather, the SSC recommends a level of catch associated with the ABC of **2,041 mt** based on the application of a constant catch approach adopted for the 2010-2012 specifications.

5) Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The SSC recommends a three-year specification to be in place through the 2015 fishing year, subject to SSC annual review of fishery-independent surveys and catch information, and in anticipation of a new benchmark assessment, which is currently scheduled for Spring 2014.

6) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations (if not possible, provide a qualitative evaluation):

It is not possible to provide an estimate of the probability of overfishing as the SSC did not endorse the estimate of OFL in the assessment.

7) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- Atypical life history strategy (protogynous hermaphrodite) means that determination of appropriate reference points is difficult;
- Assessment assumes a completely mixed stock, while tagging analyses suggest otherwise;
- Uncertainty exists with respect to M — because of the unusual life history strategy the current assumption of a constant M in the model for both sexes may not adequately capture the dynamics in M; and
- Concern about the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment. There was concern that the pattern of the calibration coefficient across lengths was difficult to justify biologically.

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

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

9) List high priority research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation:

In order of priority:

- (1) Develop a first principles foundation for establishing reference points and assessment methods to account for black sea bass' life history (Workshop to be held in late August 2012 in Raleigh, NC to address reference points);
- (2) Explore the utility of a spatially-structured assessment model for black sea bass to address the incomplete mixing in the stock;
- (3) Consider a directed study of the genetic structure in the population north of Cape Hatteras; and
- (4) Evaluate and, if appropriate, continue a fixed gear survey of black sea bass similar to the one used for scup.

10) A certification that the recommendations provided by the SSC represent the best scientific information available:

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

Summer Flounder

1) The materials considered in reaching its recommendations:

- Terceiro, M. 2012. Stock assessment of summer flounder for 2012. Northeast Fisheries Science Center. 2pp.
- MAFMC Staff Report: Summer flounder AP information document, dated June 2012 15pp.

- Terceiro, M. 2012. Stock assessment of summer flounder (*Paralichthys dentatus*). Northeast Fisheries Science Center. Slide presentation. 49 slides.
- Mid-Atlantic Fishery Management Council. 2012. Summer flounder, scup, and black sea bass fishery performance reports. 9pp.
- MAFMC staff memorandum from Jessica Coakley to Chris Moore, "Summer flounder management measures for 2013, 2014, 2015" dated July 20, 2012. 9pp.
- Memorandum from Chris Batsavidge, NCDMF, to Jessica Coakley, MAFMC, "Species composition and landings from the 2011 North Carolina flynet fishery" dated June 26, 2012. 1p.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the version of the proposed Omnibus Amendment submitted to the Secretary of Commerce:

Level 3.

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

The OFL is **13,523 mt** based on a threshold F = 0.31 ($F_{0.35}$) and 2012 projected biomass.

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock. The ABC will be selected based on the overfishing definition contained in the FMP and to reflect the level of scientific uncertainty inherent in the stock assessment such that the recommended ABC is less than or equal to the overfishing limit in line with the Act and the National Standard 1 Guidelines to the Act:

The SSC determined the 2013 ABC to be **10,133 mt** based on an OFL of 13,523 mt, 2012 projected B/Bmsy = 92%, P* = 0.364, and a lognormal distribution with of CV = 100%. Applying an F = 0.224 specifies a 2014 ABC of **10,088 mt**.

5) Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The SSC recommends a two-year specification of a constant F = 0.224 derived from the F that achieves the ABC for 2013. This two-year specification was made in anticipation of the SSC being responsive to the anticipated Spring 2013 benchmark stock assessment.

6) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations (if not possible, provide a qualitative evaluation):

Based on the method applied, the probability of overfishing associated with ABC is 36%, conditional on the assumed lognormal distribution of OFL with and associated CV = 100%.

7) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- A strong annual retrospective pattern in recruitment evident for recent year-classes;
- Uncertainty in stock status because of lack of uncertainty estimation for the biological reference points (proxy used for F_{MSY});
- Uncertainty that exists with respect to the estimate of M;

- Uncertainties resulting from the application of aggregate trawl calibration coefficients (ALBATROSS IV vs. BIGELOW) and their influence on the results of the assessment;
- Projections used to calculate ABC being based on an assumption that the quota would be landed in 2012 and 2013; and
- The assumption of constant distribution (based on 1982-2011 period) in recruitment used in the 2013 and 2014 stock projections.

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

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

9) List high priority research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation:

- Evaluate uncertainties in biomass to determine potential modifications to default OFL CV;
- Evaluate the size distribution of landed and discarded fish, by sex, in the summer flounder fisheries;
- Evaluate past and possible future changes to size regulations on retention and selectivity in stock assessments and projections;
- Incorporate sex-specific differences in size at age into the stock assessment; and
- Evaluate range expansion and change in distribution and their implications for stock assessment and management.

10) A certification that the recommendations provided by the SSC represent the best scientific information available:

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

Scup

1) The materials considered in reaching its recommendations:

- Terceiro, M. 2012. Stock assessment of scup for 2012. Northeast Fisheries Science Center. 2pp.
- MAFMC Staff Report: Scup AP information document, dated June 2012 18pp.
- Terceiro, M. 2012. Scup (*Stenotomus chrysops*): 2012 Update. Northeast Fisheries Science Center. PowerPoint presentation, 46 slides.
- Mid-Atlantic Fishery Management Council. 2012. Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports. 9pp.
- MAFMC staff memorandum from Jessica Coakley to Chris Moore, "Scup management measures for 2013, 2014, 2015" dated July 20, 2012. 9pp.
- MAFMC staff memorandum from Jessica Coakley to Chris Moore, "Scup minimum fish and mesh size - commercial" dated July 19, 2012. 6pp.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent

stock assessment, based on criteria listed in the version of the proposed Omnibus Amendment submitted to the Secretary of Commerce:

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

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

According to the projections in the Terceiro (2012), the level in catch is **21,680 mt**, based on an OFL F_{msy} proxy = F40% = 0.177.

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock:

The SSC recommended an ABC of **17,557 mt** based on the Level 3 control rule. The SSC used an assumed CV of the OFL with a lognormal distribution of 100%, noted that the ratio of B/BMSY > 1, and that scup exhibit a typical life history. The SSC applied the Council's risk policy of P* = 0.4. The recommended ABC is 81% of the catch at OFL.

5) Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The SSC recommends a three-year specification of ABC for scup, based on a constant fishing mortality rate. The fishing mortality rate associated with the 17,557-mt removal in 2013 = 0.142. This rate, applied in 2014 and 2015, results in ABCs of **16,325 mt** and **15,320 mt**, respectively. An assessment update, no later than July 2014, will be used to evaluate stock status.

6) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations (if not possible, provide a qualitative evaluation):

Based on the method applied, the probability of overfishing associated with the ABC is 40%, conditional on the assumed lognormal distribution of OFL with an associated CV = 100%.

7) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- While older age scup (age 3+) are represented in the catch used in the assessment model, most indices used in the model do not include ages 3+. As a result, the dynamics of the older ages of scup are driven principally by catches and inferences regarding year class strength;
- Uncertainty exists with respect to the estimate of natural mortality (M) used in the assessment;
- Uncertainty in the stock status results from uncertainties in the estimates of both the stock's biomass and the biological reference point proxy used for F_{MSY};
- The SSC assumed that OFL has a lognormal distribution with a CV = 100%, based on a meta-analysis of survey and SCA accuracies;
- 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;

- Uncertainties resulting from the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment; and
- The projection on which the ABC was determined was based on an assumption that the quota would be landed in 2012, 2013, and 2014.

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

As scup is not currently defined as a forage species, no additional ecosystem considerations were taken into account. Scup do not appear to have strong habitat associations or unique environmental requirements, thus no additional ecosystem considerations were considered.

9) List high priority research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation:

In order of priority:

- (1) Improve estimates of discards and discard mortality for commercial and recreational fisheries;
- (2) Evaluate indices of stock abundance from new surveys;
- (3) Quantify the pattern of predation on scup;
- (3) Conduct biological studies to investigate maturity schedules and factors affecting annual availability of scup to research surveys;
- (5) Explore the utility of incorporating ecological relationships, predation, and oceanic events that influence scup population size on the continental shelf and its availability to resource surveys into the stock assessment model; and
- (6) Evaluate alternate forms of survey selectivity in the assessment to inform indices of abundance at higher ages.

10) A certification that the recommendations provided by the SSC represent the best scientific information available:

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

Bluefish

1) The materials considered in reaching its recommendations:

- MAFMC Staff Report: Bluefish AP information document, dated June 2012. 14pp.
- Coastal Pelagic Working Group. 2012. Bluefish 2012 stock assessment update. Northeast Fisheries Science Center. 36pp.
- MAFMC staff memorandum from Jim Armstrong to Chris Moore, "Bluefish ABC and Management Measures for 2013," dated July 18, 2012. 9pp.
- MAFMC Staff. 2012. 2012 Bluefish fishery performance report. 3pp.
- Coastal Pelagic Working Group. 2012. 2012 bluefish stock assessment update. Northeast fisheries Science Center. Slide presentation. 25 slides.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent

stock assessment, based on criteria listed in the version of the proposed Omnibus Amendment submitted to the Secretary of Commerce:

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

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

The OFL is 17,521 mt based on an F_{msy} of 0.19.

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock:

The SSC recommends an ABC of **12,461 mt** (27.5 million lb) based on the control rule for Level 3 assessments. The SSC used an assumed CV of the OFL with a lognormal distribution of 100%, noting that the ratio of B/BMSY, based on mid-year estimates from 2012, is 0.8676, and that bluefish exhibit a typical life history. The SSC applied the Council's policy of P* = 0.341. The projection is 71.1% of the catch at OFL.

5) Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The SSC recommends a two-year specification of the ABC based on a constant fishing mortality rate, subject to review of an updated assessment in 2013. The SSC concerns are based on an estimated biomass currently below B_{msy}, and that recruitment for the past three years has been the lowest in the time series. The fishing mortality rate (F = 0.132), applied in 2013 and 2014, results in ABCs of **12,461 mt** (27.5 million pounds) and **12,273 mt** (27.1 million pounds), respectively.

6) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations (if not possible, provide a qualitative evaluation):

Based on the method applied, the probability of overfishing associated with the ABC is 34.1% in 2013, conditional on the assumed lognormal distribution of OFL with an associated CV = 100%.

7) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- There is a significant level of missing data involved in the age-length keys (ALKs), which are critical for development of the catch-at-age matrix;
- Concern exists about the application of aggregate trawl calibration coefficients (ALBATROSS IV vs BIGELOW), and their influence on the selectivity pattern and results of the assessment. Also, some near shore areas previously sampled by the ALBATROSS IV are unavailable for sampling by the BIGELOW;
- Commercial discards are assumed to be insignificant, which may not be the case;
- Much of population biomass (~40%) is in the aggregated 6+ age group for which there is relatively little information;
- Questions have been raised about the uncertainty in the historical MRFSS estimates in general, and are particularly relevant here given the highly episodic nature of bluefish catches in the recreational fisheries coast wide; and

- The basis for the unusual bimodal selectivity curve used in the ASAP model is not well understood.

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

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

9) List high priority research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation:

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

10) A certification that the recommendations provided by the SSC represent the best scientific information available:

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

RSA Project Selection Process

The SSC discussed the results of a recent exercise undertaken by several of the SSC members that ranked the topics for the upcoming solicitation of RSA proposals. Kara Runsten and Mark Holliday developed the spreadsheet tool used to do the ranking. SSC members who did not rank the RSA topics rankings were encouraged to do so by August 3rd and submit them to Mark Holliday (with copies to Kara Runsten), as per instructions in the original request. The aggregate rankings will then be distributed to the SSC for one final review (to see if they make sense) before being sent on to the MAFMC RSA Committee for consideration. Any comments SSC members have relative to the final aggregate rankings should be sent to Rich Seagraves.

Attachments

cc: MAFMC SSC members, R. Seagraves, L. Anderson, J. Coakley, J. Armstrong, K. Dancy, J. Saunders

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

AGENDA

Scientific and Statistical Committee Meeting

Wednesday, July 25, 2012

10:00am	Black sea bass ABC
	Summer flounder ABC
5:00pm	Meeting Adjourns

Thursday, July 26, 2012

8:00am	Scup ABC
	Bluefish ABC
	Other SSC Business
1:00pm	Meeting Adjourns (nlt 3:00pm if run late)

Summer Flounder, Scup, Black Sea Bass, and Bluefish Monitoring Committee's Meeting

Friday, July 27, 2012

8:30am	Bluefish, summer flounder, scup, and black sea bass (taken in that order) ACLs and ACTs
5:00pm	Meeting Adjourns

Lunch breaks around 12:00pm – 1:00pm

Attachment 2

MAFMC Scientific and Statistical Committee Meeting
Baltimore, MD

July 25-26, 2012

SSC Members in Attendance

Name	Affiliation
John Boreman (SSC Chairman)	North Carolina State University
Tom Miller (SSC Vice-Chair) (July 25 only)	University of Maryland – CBL
Mike Wilberg	University of Maryland - CBL
Brian Rothschild	University of Massachusetts
David Tomberlin	NMFS/S&T
Dave Secor	University of Maryland - CBL
Doug Lipton	University of Maryland - College Park
Cynthia Jones	Old Dominion University
Wendy Gabriel	NMFS/NEFSC
Ed Houde	University of Maryland - CBL
Doug Vaughan	North Carolina
Mark Holliday	NMFS/HQ
Jason Link	NMFS/NEFSC
Mike Frisk	SUNY Stony Brook
Yan Jiao	Virginia Tech

Others in attendance

Rich Seagraves	MAFMC staff
Jessica Coakley	MAFMC staff
Jim Armstrong (July 26 only)	MAFMC staff
Kiley Dancy	MAFMC staff
Rick Robins	MAFMC Chair
Lee Anderson	MAFMC Vice-chair
Fred Serchuk	NMFS/NEFSC
Tony Wood (July 26 only)	NMFS/NEFSC
Kara Runsten (July 26 only)	NMFS/HQ
Jeff Kaelin	Lunds Fisheries
Gary Shepherd	NMFS/NEFSC
Mark Terceiro	NMFS/NEFSC
Toni Kerns	ASMFC staff
Paul Caruso	MA DMF
Jason McNamee	RI DFW
Greg Wojcik	CT DMF
Desmond Kahn (July 26 only)	DE DMF

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901-3910
Phone: 302-674-2331 | Toll Free: 877-446-2362 | FAX: 302-674-5399 | www.mafmc.org
Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
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: Summer Flounder Management Measures for 2013, 2014, 2015

Executive Summary

Based on the assessment update that was conducted in July 2012, the summer flounder stock is not overfished and overfishing is not occurring. The ASAP model estimated spawning stock biomass (SSB) was 125.7 million lb (57,020 mt) in 2011 (95% of the biomass at maximum sustainable yield, SSB_{MSY}). Staff recommends summer flounder 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 summer flounder and the Council risk policy on overfishing a "typical" stock, the staff recommendation for ABC is 22.34 million lb (10,133 mt) for 2013, 2014, and 2015. The staff recommend a commercial ACL and recreational ACL of 12.11 million lb (5,491 mt) and 10.23 million lb (4,642 mt), respectively. Staff also recommend a commercial annual catch target (ACT) of 12.11 million lb (5,491 mt), a commercial quota less 3% research set-aside (RSA) of 11.44 million lb (5,189 mt), a recreational ACT of 9.42 million lb (4,271 mt), and a recreational harvest limit less 3% RSA of 7.02 million lb (3,182 mt), for 2013, 2014, and 2015. The recreational ACT was reduced from the recreational ACL by 8%. Staff do not recommend any change to the current minimum fish size (14 inch-TL), gear requirements, or exemption programs (small mesh and NC flynet). States that allocate 15% of their commercial quota to bycatch fisheries should continue to do so, and all other states should consider measures which reduce bycatch. Staff recommend up to 3% of the total allowable landings (TAL) be made available to the RSA Program.

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's Scientific and Statistical Committee (SSC) to provide, 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 summer flounder 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 summer flounder management measures. In this memorandum, information is presented to assist the SSC and Monitoring Committee in developing recommendations for the Council and Board to consider for the 2013, 2014, and 2015 fishery for summer flounder.

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

Catch and Landings Update

Based on the assessment update, the 2011 commercial and recreational landings were 16.6 million lb (7,511 mt) and 5.83 million lb (2,645 mt), respectively. The 2012 commercial landings as of the week ending July 14, 2012, indicate that 66% of the coastwide commercial quota has been landed (Table 1).

Table 1. The 2012 state-by-state quotas and the amount of summer flounder landed by commercial fishermen, in each state as of week ending July 14, 2012.

	Commercial			Research
State	**Cumulative Landings (lb)**	**Quota (lb)[a]**	**Percent of Quota (%)**	**Set-Aside Landings (lb)**
ME	0	6,054	0	0
NH	0	59	0	0
MA	535,002	868,226	62	2,586
RI	1,449,922	1,996,400	73	95,132
CT	238,834	287,320	83	5,160
NY	686,269	922,705	74	87,754
NJ	1,095,301	2,129,045	51	0
DE	0		0	0
MD	68,429	259,572	26	0
VA	3,367,145	4,603,985	73	0
NC	890,885	1,603,359	56	0
Other	0		0	0
Totals	**8,331,787**	**12,676,725**	**66**	**190,632**

[a] Note that the total quota column accounts for Delaware as zero. 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 summer flounder specifications for 2012, a new summer flounder stock assessment update became available from the NMFS 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 28% to 31.59 million lb (14,328 mt). Based on this revised OFL, the associated ABC was 25.58 million lb (11,603 mt). This was based on the 2011 projected B/Bmsy = 101%, Council risk policy P* = 0.4, and a lognormal distribution with of CV = 100%. The associated 2012 commercial quota was 12.73 million lb (5,774 mt) and the recreational harvest limit was 8.49 million lb (3,851 mt).

The SSC considered summer flounder to be a level 3 assessment and considered the following to be the most significant sources of uncertainty: strong annual retrospective pattern in recruitment for the last three years; uncertainty in stock status because of lack of uncertainty estimation for the biological reference points (proxy used for F_{MSY}); uncertainty with respect to the estimate of M; no uncertainty characterization for the OFL; and concern about the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment.

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

Biological Reference Points

The SAW 47 biological reference points for summer flounder include a fishing mortality threshold of FMSY = F35%(as FMSY proxy) = 0.310 and SSBMSY = SSB35%(as SSBMSY proxy) = 132.4 million lb (60,074 mt). The minimum stock size threshold, one-half SSBMSY, is estimated to be 66.2 million lb (30,037 mt).

Stock Status and Projections

The most recent benchmark peer-reviewed and accepted assessment for summer flounder resulted from the June 2008 Stock Assessment Workshop (SAW/SARC 47). The assessment utilizes an age-structured assessment model called ASAP. Documentation on this assessment and previous stock assessments, such as reports on stock status, including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) panelist reports, are available online at the NEFSC website: http://www.nefsc.noaa.gov/saw/.

The July 2012 assessment update indicates that the summer flounder stock is not overfished and overfishing is not occurring relative to the biological reference points established in the SAW 47 assessment. The fishing mortality rate has been below 1.0 since 1997 and was estimated to be 0.241 in

2011, below the threshold fishing mortality reference point FMSY = 0.310. SSB was estimated to be 125.7 million lb (57,020 mt) in 2011, 5% below the SSBMSY = 132.4 million lb (60,074 mt). NMFS declared the summer flounder stock rebuilt in 2010, based on the 2011 assessment update. Projections indicate that if the stock is fished at the fishing mortality threshold of $F_{MSY} = F_{35\%}$ (as F_{MSY} proxy) = 0.310 in 2013, median landings are projected to be 26.217 million lb (11,892 mt), with median discards of 3.609 million lb (1,637 mt), and median total catch 29.813 million lb (13,523 mt). This projected median total catch is equivalent to the Overfishing Limit (OFL) for 2013, and is less than the MSY of 32.258 million lb (14,632 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 summer flounder 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 29.81 million lb (13,523 mt) is defined by the fishing mortality threshold of F=0.31 and projected biomass in 2012 (121.92 million lb, 55,300 mt; 92% 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 summer flounder stock. Last year, the SSC classified the summer flounder assessment as level 3 and applied the Council risk policy for a typical stock using a lognormal OFL distribution with a CV equal to 100%. Staff recommend the same approach be applied to derive the 2013 ABC, and that the same ABC be utilized for 2014 and 2015. Based on the 2012 projected SSB/SSB_{MSY} = 92%, Council risk policy P* = 0.364, and a lognormal distribution with of CV = 100%, the staff recommend an ABC of 22.34 million lb (10,133 mt) for 2013, 2014, and 2015 (Table 2). This ABC is about 75% of the OFL. Based on projections at this ABC for 2013, the stock is expected to continue to grow to a 2013 SSB of 122.95 million lb (55,767 mt) with a 2013 F=0.224. 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, the ABC is equivalent to the total allowable catch (TAC) and the sum of the commercial and recreational ACL equals the ABC (Figure 1).

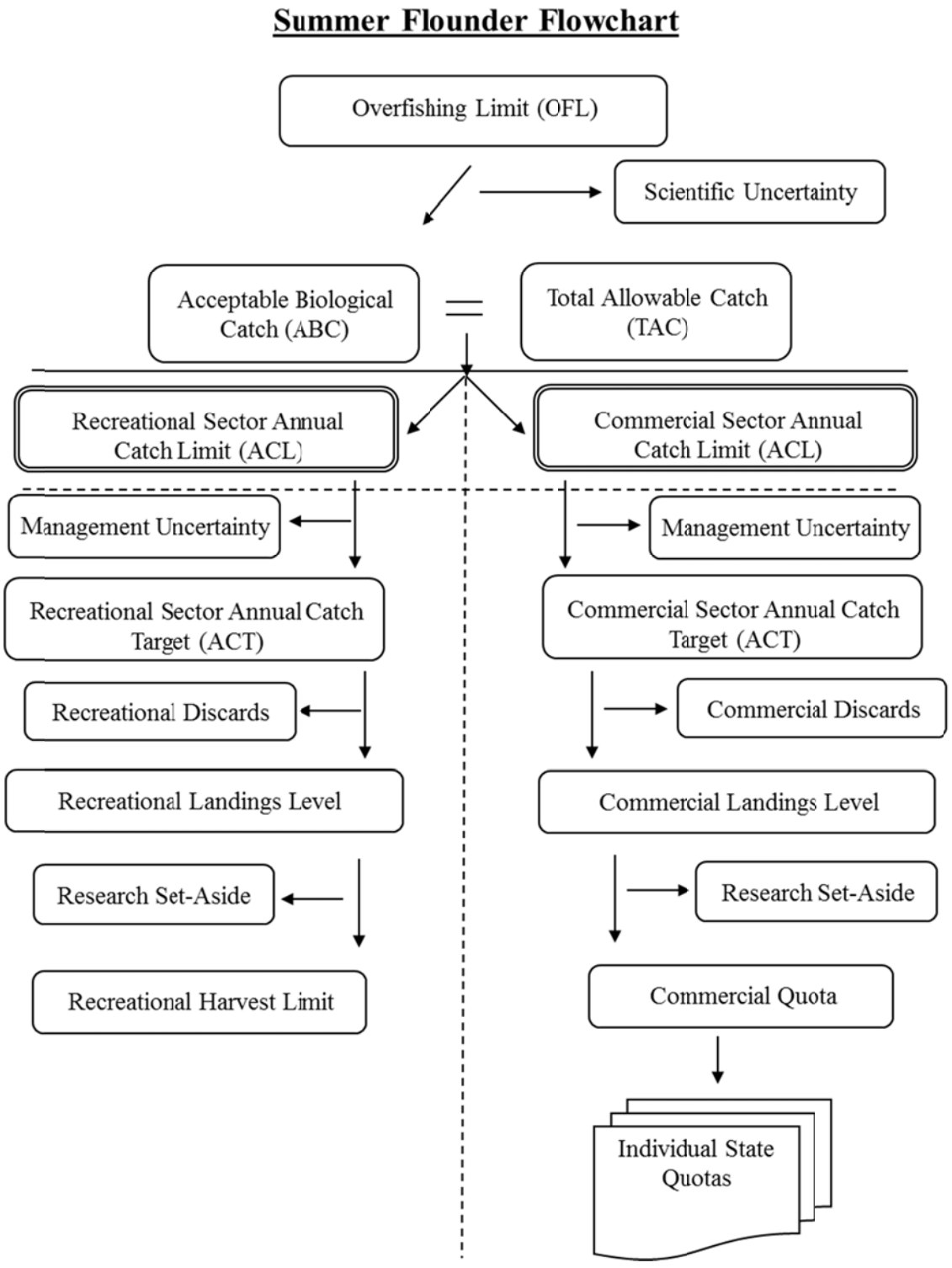

Figure 1. Summer flounder catch and landings limits.

An ABC of 22.34 million lb (10,133 mt) is comprised of both landings and discards. Based on the allocation percentages of the FMP, 60% of the landings are allocated to the commercial fishery, and 40% to the recreational (Table 2). Discards are apportioned based on the contribution from each fishing sector using the 2009-2011 average ratios; 88% of dead discards are attributable to the recreational fishery, 12% to the commercial.

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

	Catch (Landings + Discards)	Landings Portion	Discards Portion
ABC	22.34 mil lb (10,133 mt)	19.65 mil lb (8,915 mt)	2.69 mil lb (1,218 mt)
Recreational ACL	10.23 mil lb (4,642 mt)	7.86 mil lb (3,566 mt)	2.37 mil lb (1,076 mt)
Commercial ACL	12.11 mil lb (5,491 mt)	11.79 mil lb (5,349 mt)	0.31 mil lb (142 mt)

Considerations for ACTs

As described in the Omnibus Amendment, the Summer Flounder 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 summer flounder fishery and provide the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. The ACTs, technical basis, and sources of management uncertainty would be described and provided to the Council. Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

The recent year sector-specific landings performance indicates that the recreational fishery had been somewhat variable in its performance relative to the harvest limits (Table 3). The proportional standard error on coastwide summer flounder recreational catch (based on MRIP) is 8%. Because this serves as an indicator of the variability of the data, staff recommend an 8% 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 9.42 million lb (4,271 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. Commercial and recreational fishery performance relative to quotas and harvest limits, 2007-2011.

Year	Commercial Landings (mil lb)[1]	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb)[1]	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2007	9.90	9.79	+1%	9.26	6.68	+39%
2008	9.13	9.32	-2%	8.13	6.21	+31%
2009	10.69	10.74	0%	5.99	7.16	-16%
2010	13.07	12.79	+2%	5.11	8.59	-41%
2011	16.56	17.38	-5%	5.83	11.58	-50%
5-yr Avg.	-	-	-1%	-	-	-7%

[1]Based on the July 2012 assessment update.

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

The landings-based allocations (i.e., commercial 60%, recreational 40%) were maintained in the derivation of the sector-specific ACLs and ACTs, such that the sum of the sector-specific 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 11.44 million lb (5,189 mt) and the recreational harvest limit is 7.02 million lb (3,182 mt).
The commercial quota would be divided amongst the states based on the allocation percentages given in Table 4.

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

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

Specific management measures that will be used to achieve the harvest limit for the recreational fishery in 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.

Gear Regulations and Minimum Fish Size - Commercial Fishery

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

Exemption Programs

Vessels landing more than 200 lb of summer flounder, east of longitude 72° 30.0'W, from November 1 through April 30, and not using a 5.5" minimum mesh (diamond) or 6" minimum mesh (square) net, are required to obtain a small mesh exemption program (SMEP) permit from NMFS. The FMP requires that sea sampling data be reviewed annually to determine if vessels fishing seaward of the line, with smaller than the required minimum mesh size and landing more than 200 lb of summer flounder, are discarding more than 10% of their summer flounder catch. Staff evaluated the available NMFS sea sample data for the period from November 1, 2011 to January 27, 2012.[1] These data indicate that a total of 337 trips were observed east 72° 30.0'W; 171 of these trips landed summer flounder (Table 5). Of those 171 trips, 86 reported using small mesh and 25 landed more than 200 lb of summer flounder. Of those 25 trips, 4 trips discarded more than 10% of their catch. The percentage of trips that met all these criteria relative to the total number of observed trips east of 72° 30.0'W is 1% (4 trips/337 trips). The prior year percentage of trips that met the criteria was also 1%. Based on this information, staff recommend no change in the SMEP program.

In addition, vessels fishing with a two-seam otter trawl flynet are exempt. Specifically, flynets have large mesh in the wings that measure 8 to 64 inches, the belly of the net has 35 or more meshes that are at least 8 inches, and the mesh decreases in size throughout the body of the net to 2 inches or smaller. Only North Carolina has a flynet fishery at present. The supplemental memo from Chris Batsavage dated June 26,

[1] At the time of analysis, data through April 30, 2012 were not available. Data were analyzed through the most recent date available, January 27, 2012.

2012 indicates that summer flounder comprised less than 1% of the total landings by flynet in North Carolina in 2011. Therefore, staff recommend no change to this exemption program.

Table 5. Numbers of trips that meet specific criteria based on observer trips from November 1, 2011 to January 27, 2012.

November 1, 2011 – January 27, 2012	Trips
Trips with tows east of 72° 30' W Longitude	337
That landed summer flounder	171
That used small mesh	86
That landed more than 200 lb of summer flounder	25
Number that discarded >10% of summer flounder catch	4
Total discards (lb) from those 3 trips	400
Total landings (lb) from those 3 trips	2001
Total catch (lb) from those 3 trips	2,401

Bycatch

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

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

Beverly Eaves Perdue
Governor

Dr. Louis B. Daniel III
Director

Dee Freeman
Secretary

Memorandum

To: Jessica Coakley, MAFMC

From: Chris Batsavage, NCDMF

Date: June 26, 2012

Subject: Species composition and landings from the 2011 North Carolina flynet fishery

The following table provides the species composition and landings in pounds from the North Carolina flynet fishery in 2011. Individual landings listed as "other species" are not reported because the data are confidential and cannot be distributed to sources outside the NC Division of Marine Fisheries (North Carolina General Statute 113-170.3 (c)). Confidential data can only be released in a summarized format that does not allow the user to track landings or purchases to an individual. Summer flounder flynet landings were among the confidential data but less than 2,000 lb were landed, and the landings accounted for less than 0.05% of the total flynet landings.

Species	Weight (lb)	Percent
Atlantic Menhaden (Bait)	2,859,150	60.18%
Atlantic Croaker	459,381	9.67%
Striped Bass	80,678	1.70%
Bluefish	9,010	0.19%
Butterfish	347	0.01%
Sea Mullet (Kingfish)	193	0.00%
Other Species	1,342,246	28.25%
Total	4,751,005	

	Other Species	
Squid	Swordfish	Smooth Dogfish
Scup	Thresher Shark	Monkfish
Longfin Squid	Summer Flounder*	Cobia
Spiny Dogfish	Atlantic Mackerel	Weakfish
Black Sea Bass	Sheepshead	King Mackerel
John Dory	Black Drum	Triggerfish

*Summer flounder landings were < 2,000 lb and < 0.05% of total flynet landings

3441 Arendell Street, P.O. Box 769, Morehead City, North Carolina 28557
Phone: 252-726-7021 \ FAX: 252-726-0254 \ Internet: www.ncdmf.net

STOCK ASSESSMENT OF SUMMER FLOUNDER FOR 2012

Mark Terceiro
National Marine Fisheries Service
Northeast Fisheries Science Center
166 Water Street

EXECUTIVE SUMMARY

This assessment of the summer flounder (*Paralichthys dentatus*) stock along the U.S. Atlantic coast (Maine to North Carolina) is an update through 2011 of commercial and recreational fishery catch data, research survey indices of abundance, and the analyses of those data. The summer flounder stock was not overfished and overfishing was not occurring in 2011 relative to the biological reference points established in the 2008 SAW 47 assessment. The fishing mortality rate (F) was estimated to be 0.241 in 2011, below the fishing mortality threshold reference point = FMSY = F35% = 0.310. Spawning Stock Biomass (SSB) was estimated to be 57,020 metric tons (mt) = 125.708 million lbs in 2011, 5% below the biomass target reference point = SSBMSY = SSB35% = 60,074 mt = 132.440 million lbs. The NMFS determined in November 2011 that the summer flounder stock reached the biomass target (i.e., was rebuilt) in 2010, based on the 2011 assessment update.

Reported 2011 landings in the commercial fishery were 7,511 mt = 16.559 million lbs, about 94% of the commercial quota. Estimated 2011 landings in the recreational rod-and-reel fishery (as estimated by the MRIP) were 2,645 mt = 5.831 million lbs, about 50% of the recreational harvest limit. Total commercial and recreational landings in 2011 were 10,156 mt = 22.390 million lbs and total commercial and recreational discards were 1,222 mt = 2.694 million lbs, for a total catch in 2011 of 11,378 mt = 25.084 million lbs. Commercial landings have accounted for 56% of the total catch since 1982, with recreational landings accounting for 36%, recreational discards about 5%, and commercial discards about 3%. Commercial discard losses in the otter trawl and scallop dredge fisheries have accounted for about 5% of the total commercial catch, assuming a discard mortality rate of 80%. Recreational discard losses have accounted for about 12% of the total recreational catch, assuming a discard mortality rate of 10%.

Fishing mortality (F) calculated from the average of the currently fully recruited ages (3-7+) ranged between about 1.0 and 2.0 during 1982-1996. The fishing mortality rate declined to below 1.0 after 1996 and was estimated to be 0.241 in 2011, with a 50% probability that the fishing mortality rate in 2011 was between 0.228 and 0.254. SSB decreased from about 25,000 mt = 55.116 million lbs in the early 1980s to about 7,000 mt = 15.432 million lbs in 1989, and then increased to above 40,000 mt = 88.185 million lbs by 2002. SSB was estimated to be 57,020 mt = 125.708 million lbs in 2011, with a 50% probability that SSB in 2011 was between 54,440 and 59,822 mt (120.020 and 131.885 million lbs). The arithmetic average recruitment from 1982 to 2011 is 42 million fish at age 0. The 1982 and 1983 year classes are the largest in the assessment time series, at 72 and 81 million fish; the 1988 year class is the smallest at 13 million fish. The 2009 year class is estimated to be about 47 million fish, about 10% above average. The current estimate of the size of the 2009 year class is about 50% smaller than the initial estimate from the 2010 assessment of 80 million fish. Both the 2010 and 2011 year classes are estimated to be smaller than average.

The summer flounder stock assessment has historically exhibited a consistent retrospective pattern of underestimation of F and overestimation of SSB; the causes of this pattern have not been determined. For the last six terminal years, however, fishing mortality has been overestimated and SSB underestimated. A recent pattern of retrospective overestimation in recruitment (R) is also evident. The estimates of SSB, R and F over the last five assessments are consistent with the most recent internal retrospective pattern of the assessment model.

If the landings of summer flounder in 2012 equal the specified Total Allowable Landings (TAL) = 10,238 mt = 22.571 million lbs, the 2012 median (50% probability) discards are projected to be 1,455 mt = 3.208 million lbs, and the median total catch is projected to be 11,693 mt = 25.779 million lbs. The median F in 2012 is projected to be 0.247, below the fishing mortality threshold = FMSY = F35% = 0.310. The median SSB on November 1, 2012 is projected to be 55,300 mt = 121.916 million lbs, below the biomass target of SSBMSY = SSB35% = 60,074 mt = 132.440 million lbs.

If the stock is fished at the fishing mortality threshold = FMSY = F35% = 0.310 in 2013, median landings are projected to be 11,892 mt = 26.217 million lbs, with median discards of 1,637 mt = 3.609 million lbs, and median total catch = 13,523 mt = 29.813 million lbs. This projected median total catch is equivalent to the Overfishing Limit (OFL) for 2013, and is less than the MSY = 14,632 mt (32.258 million lbs) of total catch (13,122 mt = 28.929 million lbs of landings plus 1,510 mt = 3.329 million lbs of discards). The median SSB on November 1, 2013 is projected to be 52,843 mt = 116.499 million lbs, 88% of the biomass target of SSBMSY = SSB35% = 60,074 mt = 132.440 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
13,523	11,892	1,637	0.310	52,843

AGEPRO VERSION 4.2

Summer Flounder 2012 Projection Update: Project 2013 OFL

Date & Time of Run: 19 Jul 2012 11:10

Input File Name: H:\NFTDATA\FLUKE\ASAP\F2012\MRIP_CATCH\PRO_F2012_FMSY_MRIP.INP

First Age Class:	1
Number of Age Classes:	8
Number of Years in Projection:	4
Number of Fleets:	1
Number of Recruitment Models:	1
Number of Bootstraps:	1000
Number of Simulations:	100

Bootstrap File Name: C:\NFTFLUKE\MRIP_CATCH\BUILD_F2012_MRIP_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	10238
2013	F-Mult	0.3100
2014	F-Mult	0.3100
2015	F-Mult	0.3100

Recruits 1000 Fish

Year Class	Average	StdDev
2012	41482.2524	11846.3619
2013	41492.1806	11829.9701
2014	41506.0519	11860.1020
2015	41472.2920	11830.5953

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2013	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2014	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2015	16562.9500	27202.5000	30651.2200	34533.8000	38354.2600	46502.2200	57318.1200	67062.4000	78040.5000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev

2012	55.3239	4.6076
2013	52.9297	3.8824
2014	51.9258	3.9035
2015	51.4573	4.4120

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	44.1039	47.9470	49.6201	52.3021	55.3000	58.1724	61.3028	63.0835	66.8229
2013	43.7416	46.7365	48.1822	50.3150	52.8427	55.3548	57.8965	59.6540	62.5397
2014	43.5431	45.9597	47.2056	49.2704	51.6726	54.3128	57.0697	58.8453	62.1633
2015	42.4566	44.9706	46.2451	48.4036	51.0068	54.1081	57.4335	59.4627	63.2254

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	61.4060	4.5104
2013	60.3499	4.8246
2014	58.2565	4.3302
2015	57.5187	4.6191

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	50.2885	54.2214	55.8776	58.4529	61.3550	64.1883	67.3611	69.0309	72.7651
2013	48.5303	52.6239	54.4311	57.1374	60.2778	63.3821	66.5127	68.4393	72.3365
2014	48.5443	51.4857	52.9437	55.3092	58.0770	60.9767	63.9003	65.7698	69.1820
2015	47.8537	50.5665	51.9834	54.3518	57.1455	60.3524	63.6743	65.7743	69.7385

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	62.3750	4.6353
2013	60.9555	4.5516
2014	59.7784	4.4922
2015	59.2302	4.9744

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	51.0589	54.9261	56.6493	59.3428	62.3029	65.2573	68.3350	70.1804	73.9209
2013	50.4869	53.7473	55.3365	57.8613	60.8231	63.8498	66.8763	68.8013	72.1608
2014	50.1128	52.8699	54.3082	56.7111	59.4918	62.5862	65.7010	67.6465	71.4070
2015	49.0323	51.8330	53.2991	55.7595	58.7736	62.2884	65.9133	68.1522	72.4295

Combined Catch Biomass x 1000 MT

Year	Average	StdDev

2012	11.6966	0.0754
2013	13.5369	1.1662
2014	12.6471	0.9349
2015	12.4240	0.8991

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	11.5292	11.5778	11.6022	11.6456	11.6929	11.7474	11.7929	11.8288	11.8836
2013	10.6868	11.6876	12.1281	12.7657	13.5228	14.2683	15.0395	15.5103	16.5038
2014	10.4318	11.1479	11.5074	12.0154	12.6257	13.2309	13.8376	14.2738	14.9449
2015	10.4835	11.0431	11.3345	11.8118	12.3692	12.9757	13.6083	14.0100	14.7675

Landings x 1000 MT

Year	Average	StdDev
2012	10.2380	0.0000
2013	11.8946	1.0641
2014	10.9064	0.8572
2015	10.5427	0.7404

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380
2013	9.3080	10.2152	10.5888	11.1743	11.8916	12.5630	13.2661	13.7187	14.4813
2014	8.8359	9.5343	9.8656	10.3291	10.8956	11.4422	11.9977	12.3756	13.0269
2015	8.8848	9.3749	9.6323	10.0415	10.5152	11.0073	11.5135	11.8264	12.4046

Discards x 1000 MT

Year	Average	StdDev
2012	1.4586	0.0754
2013	1.6423	0.1281
2014	1.7406	0.1342
2015	1.8813	0.2380

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	1.2912	1.3398	1.3642	1.4075	1.4549	1.5094	1.5549	1.5908	1.6457
2013	1.3505	1.4449	1.4829	1.5563	1.6373	1.7214	1.8164	1.8647	1.9736
2014	1.4671	1.5464	1.5856	1.6498	1.7257	1.8158	1.9186	1.9932	2.1182
2015	1.4118	1.5605	1.6223	1.7215	1.8439	2.0049	2.2059	2.3537	2.5628

Total Fishing Mortality

Year	Average	StdDev

2012	0.2492	0.0218
2013	0.3100	0.0000
2014	0.3100	0.0000
2015	0.3100	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.2042	0.2164	0.2219	0.2350	0.2470	0.2623	0.2771	0.2857	0.3128
2013	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100
2014	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100
2015	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100

JAN-1 Stock Numbers at Age - 1000 Fish

2012

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	37899.4000	38358.3000	38629.1000	39023.8000	39454.5000	39929.4000	40365.7000	40673.6000	41122.0000
2	12462.6000	14410.6000	15412.4000	17230.7000	19620.1500	21999.0000	24385.5000	26389.4000	29519.6000
3	12970.6000	14321.9000	15144.1000	16447.9000	17869.0500	19524.6000	21155.4000	22055.1000	24163.7000
4	13970.9000	14977.6000	15491.0000	16567.6000	17594.2000	18811.0000	20002.9000	20666.3000	21759.6000
5	8693.4100	9379.0000	9754.6200	10365.4000	11089.5000	11739.3000	12427.6000	12814.6000	13617.3000
6	4951.7300	5373.9100	5541.7300	5881.1800	6254.8600	6650.2600	7127.3500	7425.0200	7841.6700
7	2726.8000	2995.0600	3109.5200	3319.5400	3584.7600	3832.1400	4089.5800	4229.9500	4431.7400
8+	3704.6200	4029.0900	4253.3800	4574.5100	4937.0400	5313.8000	5699.9900	5927.6600	6356.8100

2013

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2	29436.2000	29789.8600	30003.4200	30315.6000	30650.8000	31023.3100	31364.6300	31603.4600	31957.1400
3	9233.7110	10728.6700	11470.1500	12832.5400	14615.1750	16406.7400	18164.1000	19670.6900	21903.2400
4	8520.3460	9540.3040	10118.6900	10932.6100	11976.5450	13083.7100	14241.8800	14875.6600	16296.1600
5	8276.5970	8844.2980	9298.2390	10050.6000	10743.1500	11595.6100	12483.4300	12920.6500	13757.7600
6	5064.8760	5519.5050	5781.2150	6198.2560	6745.0750	7213.6910	7655.9580	8015.2030	8607.2520
7	2888.2870	3148.8730	3311.5530	3556.2450	3828.9710	4120.0390	4468.5530	4671.0400	4974.4860
8+	3849.2450	4252.2770	4443.0430	4819.6060	5233.4775	5680.9790	6139.5590	6340.4640	6771.0660

2014

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2	12929.2300	21073.3100	23737.4800	26798.6400	29786.6500	36111.7000	44482.1000	52106.5700	60666.8200
3	21680.7600	21941.2400	22098.5400	22328.4700	22575.3550	22849.7200	23101.1100	23277.0200	23537.5200
4	5952.2010	6915.8780	7393.8440	8272.0660	9421.1790	10576.0500	11708.8700	12680.0500	14119.1900
5	4897.1680	5483.4000	5815.8360	6283.6420	6883.6580	7520.0140	8185.6840	8549.9560	9366.4070
6	4727.6670	5051.9430	5311.2380	5740.9960	6136.5835	6623.5180	7130.6470	7380.3950	7858.5590

7	2920.1340	3182.2490	3333.1370	3573.5800	3888.8460	4159.0250	4414.0130	4621.1340	4962.4770
8+	3953.6360	4334.8310	4506.2600	4893.6930	5271.6090	5650.7820	6107.0990	6355.6650	6728.5880

2015

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2	12928.1500	21120.7700	23765.2900	26819.7000	29780.8300	36105.2500	44552.5500	52078.3500	60578.3900
3	9522.8180	15521.2100	17483.4600	19738.1000	21938.8800	26597.4900	32762.5700	38378.2600	44683.1700
4	13975.7700	14143.6800	14245.0800	14393.2900	14552.4450	14729.3000	14891.3500	15004.7400	15172.6700
5	3421.0960	3974.9810	4249.6970	4754.4660	5414.9320	6078.7090	6729.8110	7288.0030	8115.1660
6	2797.3070	3132.1680	3322.0580	3589.2730	3932.0075	4295.5000	4675.7370	4883.8120	5350.1760
7	2725.7180	2912.6780	3062.1740	3309.9490	3538.0230	3818.7630	4111.1460	4255.1380	4530.8220
8+	4068.0800	4391.7380	4600.2080	4962.7990	5340.0280	5661.7870	6065.4240	6284.0440	6698.1850

Probability Spawning Stock Biomass Exceeds Threshold 60.074 (1000 MT)

Year	Probability
2012	0.150000
2013	0.040440
2014	0.029110
2015	0.039470

Probability Threshold Exceeded at Least Once = 0.1758

Probability Total Fishing Mortality Exceeds Threshold 0.3100

Year	Probability
2012	0.012000
2013	0.000000
2014	0.000000
2015	0.000000

Probability Threshold Exceeded at Least Once = 0.0120

AGEPRO VERSION 4.2

Summer Flounder 2012 Projection Update: Project 2013 ABC

Date & Time of Run: 19 Jul 2012 11:25

Input File Name: H:\NFTDATA\FLUKE\ASAP\F2012\MRIP_CATCH\PRO_F2012_MRIP_2013ABC.INP

First Age Class:	1
Number of Age Classes:	8
Number of Years in Projection:	4
Number of Fleets:	1
Number of Recruitment Models:	1
Number of Bootstraps:	1000
Number of Simulations:	100

Bootstrap File Name: C:\NFTFLUKE\MRIP_CATCH\BUILD_F2012_MRIP_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	10238
2013	Removals	10133
2014	F-Mult	0.3100
2015	F-Mult	0.3100

Recruits 1000 Fish

Year Class	Average	StdDev
2012	41482.2524	11846.3619
2013	41492.1806	11829.9701
2014	41506.0519	11860.1020
2015	41472.2920	11830.5953

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2013	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2014	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2015	16562.9500	27202.5000	30651.2200	34533.8000	38354.2600	46502.2200	57318.1200	67062.4000	78040.5000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev

2012	55.3239	4.6076
2013	55.8620	4.8632
2014	54.5875	4.6010
2015	53.3607	4.7410

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	44.1039	47.9470	49.6201	52.3021	55.3000	58.1724	61.3028	63.0835	66.8229
2013	44.2203	48.1267	49.9051	52.5869	55.7670	58.8949	62.0769	64.2356	67.9113
2014	44.4167	47.3967	48.9523	51.4716	54.3731	57.4669	60.6059	62.5645	66.3317
2015	43.4459	46.2559	47.6684	50.0837	52.9728	56.2730	59.7022	61.8179	65.8384

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	61.4060	4.5104
2013	60.3499	4.8246
2014	61.7387	5.3838
2015	60.0877	5.1824

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	50.2885	54.2214	55.8776	58.4529	61.3550	64.1883	67.3611	69.0309	72.7651
2013	48.5303	52.6239	54.4311	57.1374	60.2778	63.3821	66.5127	68.4393	72.3365
2014	49.3954	53.2361	55.1015	58.0836	61.5703	65.1583	68.7521	71.0368	75.0518
2015	48.9125	52.1067	53.7789	56.5473	59.7643	63.3322	66.9099	69.1462	73.4986

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	62.3750	4.6353
2013	62.7124	5.1045
2014	62.7257	5.2418
2015	61.3552	5.3394

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	51.0589	54.9261	56.6493	59.3428	62.3029	65.2573	68.3350	70.1804	73.9209
2013	50.8816	54.6200	56.4143	59.2528	62.5779	65.9507	69.3244	71.4671	75.2822
2014	51.1543	54.5337	56.2705	59.1614	62.4808	66.0398	69.5940	71.7542	76.0059
2015	50.1274	53.3060	54.8899	57.6295	60.9655	64.7048	68.4569	70.7917	75.2778

Combined Catch Biomass x 1000 MT

Year	Average	StdDev

2012	11.6966	0.0754
2013	10.1330	0.0000
2014	13.5095	1.2250
2015	13.0546	1.0672

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	11.5292	11.5778	11.6022	11.6456	11.6929	11.7474	11.7929	11.8288	11.8836
2013	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330
2014	10.5682	11.5548	12.0171	12.6839	13.4834	14.2746	15.0693	15.6190	16.5295
2015	10.6846	11.3849	11.7461	12.3323	13.0077	13.7229	14.4490	14.9038	15.7674

Landings x 1000 MT

Year	Average	StdDev
2012	10.2380	0.0000
2013	8.9112	0.0632
2014	11.7119	1.1324
2015	11.1443	0.9215

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380
2013	8.7469	8.8032	8.8275	8.8715	8.9153	8.9546	8.9901	9.0089	9.0363
2014	8.9697	9.9046	10.3345	10.9541	11.6988	12.4151	13.1478	13.6390	14.5364
2015	9.0295	9.6825	10.0109	10.5207	11.1171	11.7269	12.3470	12.7363	13.4229

Discards x 1000 MT

Year	Average	StdDev
2012	1.4586	0.0754
2013	1.2218	0.0632
2014	1.7976	0.1445
2015	1.9103	0.2396

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	1.2912	1.3398	1.3642	1.4075	1.4549	1.5094	1.5549	1.5908	1.6457
2013	1.0967	1.1241	1.1429	1.1784	1.2177	1.2615	1.3055	1.3298	1.3861
2014	1.4975	1.5835	1.6269	1.6998	1.7838	1.8826	1.9897	2.0618	2.1944
2015	1.4371	1.5851	1.6481	1.7494	1.8732	2.0359	2.2368	2.3839	2.5951

Total Fishing Mortality

Year	Average	StdDev

2012	0.2492	0.0218
2013	0.2260	0.0219
2014	0.3100	0.0000
2015	0.3100	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.2042	0.2164	0.2219	0.2350	0.2470	0.2623	0.2771	0.2857	0.3128
2013	0.1803	0.1928	0.1994	0.2113	0.2242	0.2389	0.2529	0.2637	0.2918
2014	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100
2015	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100	0.3100

JAN-1 Stock Numbers at Age - 1000 Fish

2012

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	37899.4000	38358.3000	38629.1000	39023.8000	39454.5000	39929.4000	40365.7000	40673.6000	41122.0000
2	12462.6000	14410.6000	15412.4000	17230.7000	19620.1500	21999.0000	24385.5000	26389.4000	29519.6000
3	12970.6000	14321.9000	15144.1000	16447.9000	17869.0500	19524.6000	21155.4000	22055.1000	24163.7000
4	13970.9000	14977.6000	15491.0000	16567.6000	17594.2000	18811.0000	20002.9000	20666.3000	21759.6000
5	8693.4100	9379.0000	9754.6200	10365.4000	11089.5000	11739.3000	12427.6000	12814.6000	13617.3000
6	4951.7300	5373.9100	5541.7300	5881.1800	6254.8600	6650.2600	7127.3500	7425.0200	7841.6700
7	2726.8000	2995.0600	3109.5200	3319.5400	3584.7600	3832.1400	4089.5800	4229.9500	4431.7400
8+	3704.6200	4029.0900	4253.3800	4574.5100	4937.0400	5313.8000	5699.9900	5927.6600	6356.8100

2013

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2	29436.2000	29789.8600	30003.4200	30315.6000	30650.8000	31023.3100	31364.6300	31603.4600	31957.1400
3	9233.7110	10728.6700	11470.1500	12832.5400	14615.1750	16406.7400	18164.1000	19670.6900	21903.2400
4	8520.3460	9540.3040	10118.6900	10932.6100	11976.5450	13083.7100	14241.8800	14875.6600	16296.1600
5	8276.5970	8844.2980	9298.2390	10050.6000	10743.1500	11595.6100	12483.4300	12920.6500	13757.7600
6	5064.8760	5519.5050	5781.2150	6198.2560	6745.0750	7213.6910	7655.9580	8015.2030	8607.2520
7	2888.2870	3148.8730	3311.5530	3556.2450	3828.9710	4120.0390	4468.5530	4671.0400	4974.4860
8+	3849.2450	4252.2770	4443.0430	4819.6060	5233.4775	5680.9790	6139.5590	6340.4640	6771.0660

2014

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2	12938.0300	21092.3200	23758.9700	26820.1700	29810.8000	36141.6700	44517.9000	52147.9700	60723.1600
3	21776.5200	22150.6800	22328.8100	22617.5000	22919.2000	23256.6300	23582.0400	23759.7100	24095.8600
4	6150.4840	7215.6100	7745.1890	8660.0850	9908.0310	11179.4000	12451.5600	13416.6000	14958.5400
5	5110.2040	5834.6220	6186.3530	6743.6940	7465.9745	8242.1620	9008.2490	9482.2230	10378.0700
6	4877.5480	5337.4170	5646.7780	6174.3170	6673.8120	7300.6730	7911.2460	8266.4290	8853.7530

7	2995.1770	3334.6360	3529.9220	3835.6410	4229.3960	4572.9440	4900.9430	5162.2380	5594.3590
8+	4081.9950	4535.4860	4776.6670	5248.5230	5721.5785	6201.4080	6773.0570	7043.5950	7586.8420

2015

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2	12928.1500	21120.7700	23765.2900	26819.7000	29780.8300	36105.2500	44552.5500	52078.3500	60578.3900
3	9529.2950	15535.2100	17499.2900	19753.9700	21956.6650	26619.5700	32788.9400	38408.7500	44724.6700
4	14037.5000	14278.6900	14393.5200	14579.6100	14774.0900	14991.6000	15201.3700	15315.8900	15532.5800
5	3535.0620	4147.2550	4451.6370	4977.4840	5694.7555	6425.4920	7156.6800	7711.3440	8597.5930
6	2918.9950	3332.7890	3533.7010	3852.0590	4264.6320	4707.9980	5145.5940	5416.3320	5928.0490
7	2812.1310	3077.2670	3255.6280	3559.7780	3847.7600	4209.1750	4561.1980	4765.9770	5104.5970
8+	4091.9590	4585.0200	4868.9680	5300.5460	5786.2545	6207.4310	6711.7020	7035.7120	7546.9690

Probability Spawning Stock Biomass Exceeds Threshold 60.074 (1000 MT)

Year	Probability
2012	0.150000
2013	0.183790
2014	0.118270
2015	0.089530

Probability Threshold Exceeded at Least Once = 0.2342

Probability Total Fishing Mortality Exceeds Threshold 0.3100

Year	Probability
2012	0.012000
2013	0.001010
2014	0.000000
2015	0.000000

Probability Threshold Exceeded at Least Once = 0.0120

AGEPRO VERSION 4.2

Summer Flounder 2012 Projection Update: Project 2013 ABC

Date & Time of Run: 25 Jul 2012 15:28

Input File Name: C:\NFTFLUKE\F2012\MRIP_CATCH\PRO_F2012_MRIP_2013ABC_2015.INP

First Age Class:	1
Number of Age Classes:	8
Number of Years in Projection:	4
Number of Fleets:	1
Number of Recruitment Models:	1
Number of Bootstraps:	1000
Number of Simulations:	100

Bootstrap File Name: C:\NFTFLUKE\F2012\MRIP_CATCH\BUILD_F2012_MRIP_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2012	Landings	10238
2013	Removals	10133
2014	F-Mult	0.2240
2015	F-Mult	0.2240

Recruits 1000 Fish

Year Class	Average	StdDev
2012	41482.2524	11846.3619
2013	41492.1806	11829.9701
2014	41506.0519	11860.1020
2015	41472.2920	11830.5953

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2013	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2014	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2015	16562.9500	27202.5000	30651.2200	34533.8000	38354.2600	46502.2200	57318.1200	67062.4000	78040.5000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev

2012	55.3239	4.6076
2013	55.8620	4.8632
2014	57.5079	4.8338
2015	59.0139	5.1158

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	44.1039	47.9470	49.6201	52.3021	55.3000	58.1724	61.3028	63.0835	66.8229
2013	44.2203	48.1267	49.9051	52.5869	55.7670	58.8949	62.0769	64.2356	67.9113
2014	46.7651	49.9289	51.5743	54.2362	57.2935	60.5438	63.8131	65.8717	69.8018
2015	48.2466	51.2887	52.8224	55.4856	58.6282	62.1822	65.8108	68.0623	72.3873

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2012	61.4060	4.5104
2013	60.3499	4.8246
2014	61.7387	5.3838
2015	63.5614	5.4264

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	50.2885	54.2214	55.8776	58.4529	61.3550	64.1883	67.3611	69.0309	72.7651
2013	48.5303	52.6239	54.4311	57.1374	60.2778	63.3821	66.5127	68.4393	72.3365
2014	49.3954	53.2361	55.1015	58.0836	61.5703	65.1583	68.7521	71.0368	75.0518
2015	51.7898	55.1626	56.9201	59.8638	63.2427	66.9681	70.6928	73.0059	77.5011

Mean Biomass x 1000 MT

Year	Average	StdDev
2012	62.3750	4.6353
2013	62.7124	5.1045
2014	64.4792	5.3773
2015	66.0933	5.6383

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	51.0589	54.9261	56.6493	59.3428	62.3029	65.2573	68.3350	70.1804	73.9209
2013	50.8816	54.6200	56.4143	59.2528	62.5779	65.9507	69.3244	71.4671	75.2822
2014	52.5869	56.0516	57.8474	60.8232	64.2355	67.8889	71.5267	73.7183	78.0760
2015	54.1698	57.5387	59.2230	62.1691	65.7148	69.6313	73.5694	76.0216	80.7113

Combined Catch Biomass x 1000 MT

Year	Average	StdDev

2012	11.6966	0.0754
2013	10.1330	0.0000
2014	10.1081	0.9187
2015	10.4078	0.8483

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	11.5292	11.5778	11.6022	11.6456	11.6929	11.7474	11.7929	11.8288	11.8836
2013	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330	10.1330
2014	7.9023	8.6415	8.9891	9.4891	10.0883	10.6820	11.2777	11.6895	12.3730
2015	8.5153	9.0749	9.3646	9.8330	10.3738	10.9407	11.5171	11.8758	12.5562

Landings x 1000 MT

Year	Average	StdDev
2012	10.2380	0.0000
2013	8.9112	0.0632
2014	8.7750	0.8497
2015	8.9426	0.7415

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380	10.2380
2013	8.7469	8.8032	8.8275	8.8715	8.9153	8.9546	8.9901	9.0089	9.0363
2014	6.7178	7.4192	7.7419	8.2067	8.7653	9.3027	9.8524	10.2202	10.8942
2015	7.2311	7.7659	8.0300	8.4416	8.9215	9.4105	9.9090	10.2213	10.7737

Discards x 1000 MT

Year	Average	StdDev
2012	1.4586	0.0754
2013	1.2218	0.0632
2014	1.3331	0.1065
2015	1.4652	0.1795

Discards Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	1.2912	1.3398	1.3642	1.4075	1.4549	1.5094	1.5549	1.5908	1.6457
2013	1.0967	1.1241	1.1429	1.1784	1.2177	1.2615	1.3055	1.3298	1.3861
2014	1.1116	1.1749	1.2068	1.2609	1.3232	1.3961	1.4749	1.5272	1.6240
2015	1.1101	1.2216	1.2688	1.3446	1.4376	1.5591	1.7092	1.8206	1.9792

Total Fishing Mortality

Year	Average	StdDev

2012	0.2492	0.0218
2013	0.2260	0.0219
2014	0.2240	0.0000
2015	0.2240	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2012	0.2042	0.2164	0.2219	0.2350	0.2470	0.2623	0.2771	0.2857	0.3128
2013	0.1803	0.1928	0.1994	0.2113	0.2242	0.2389	0.2529	0.2637	0.2918
2014	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240
2015	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240

JAN-1 Stock Numbers at Age - 1000 Fish

2012

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	37899.4000	38358.3000	38629.1000	39023.8000	39454.5000	39929.4000	40365.7000	40673.6000	41122.0000
2	12462.6000	14410.6000	15412.4000	17230.7000	19620.1500	21999.0000	24385.5000	26389.4000	29519.6000
3	12970.6000	14321.9000	15144.1000	16447.9000	17869.0500	19524.6000	21155.4000	22055.1000	24163.7000
4	13970.9000	14977.6000	15491.0000	16567.6000	17594.2000	18811.0000	20002.9000	20666.3000	21759.6000
5	8693.4100	9379.0000	9754.6200	10365.4000	11089.5000	11739.3000	12427.6000	12814.6000	13617.3000
6	4951.7300	5373.9100	5541.7300	5881.1800	6254.8600	6650.2600	7127.3500	7425.0200	7841.6700
7	2726.8000	2995.0600	3109.5200	3319.5400	3584.7600	3832.1400	4089.5800	4229.9500	4431.7400
8+	3704.6200	4029.0900	4253.3800	4574.5100	4937.0400	5313.8000	5699.9900	5927.6600	6356.8100

2013

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16653.0100	27142.6800	30574.1700	34516.9700	38365.5650	46512.3000	57293.4800	67113.9000	78139.6000
2	29436.2000	29789.8600	30003.4200	30315.6000	30650.8000	31023.3100	31364.6300	31603.4600	31957.1400
3	9233.7110	10728.6700	11470.1500	12832.5400	14615.1750	16406.7400	18164.1000	19670.6900	21903.2400
4	8520.3460	9540.3040	10118.6900	10932.6100	11976.5450	13083.7100	14241.8800	14875.6600	16296.1600
5	8276.5970	8844.2980	9298.2390	10050.6000	10743.1500	11595.6100	12483.4300	12920.6500	13757.7600
6	5064.8760	5519.5050	5781.2150	6198.2560	6745.0750	7213.6910	7655.9580	8015.2030	8607.2520
7	2888.2870	3148.8730	3311.5530	3556.2450	3828.9710	4120.0390	4468.5530	4671.0400	4974.4860
8+	3849.2450	4252.2770	4443.0430	4819.6060	5233.4775	5680.9790	6139.5590	6340.4640	6771.0660

2014

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16651.6200	27203.8100	30609.9900	34544.1000	38358.0750	46504.0000	57384.2200	67077.5500	78025.7000
2	12938.0300	21092.3200	23758.9700	26820.1700	29810.8000	36141.6700	44517.9000	52147.9700	60723.1600
3	21776.5200	22150.6800	22328.8100	22617.5000	22919.2000	23256.6300	23582.0400	23759.7100	24095.8600
4	6150.4840	7215.6100	7745.1890	8660.0850	9908.0310	11179.4000	12451.5600	13416.6000	14958.5400
5	5110.2040	5834.6220	6186.3530	6743.6940	7465.9745	8242.1620	9008.2490	9482.2230	10378.0700
6	4877.5480	5337.4170	5646.7780	6174.3170	6673.8120	7300.6730	7911.2460	8266.4290	8853.7530

7	2995.1770	3334.6360	3529.9220	3835.6410	4229.3960	4572.9440	4900.9430	5162.2380	5594.3590
8+	4081.9950	4535.4860	4776.6670	5248.5230	5721.5785	6201.4080	6773.0570	7043.5950	7586.8420

2015

Age	1%	5%	10%	25%	50%	75%	90%	95%	99%
1	16716.5100	27127.1900	30539.3200	34551.7600	38365.3250	46508.3200	57375.4600	67201.2000	78047.6000
2	12939.2700	21138.9400	23785.7400	26842.7700	29806.4550	36136.3100	44590.8800	52123.1600	60630.5100
3	9677.9560	15777.5700	17772.2800	20062.1400	22299.2000	27034.8400	33300.4600	39007.9400	45422.3900
4	14793.5700	15047.7500	15168.7600	15364.8700	15569.8300	15799.0500	16020.1200	16140.8100	16369.1700
5	3845.9120	4511.9380	4843.0850	5415.1710	6195.5150	6990.5080	7785.9920	8389.4290	9353.6100
6	3181.1390	3632.0940	3851.0490	4197.9990	4647.6230	5130.8060	5607.7000	5902.7530	6460.4260
7	3056.7820	3344.9840	3538.8620	3869.4730	4182.5085	4575.3660	4958.0140	5180.6090	5548.6880
8+	4439.6630	4974.7830	5282.7110	5750.9260	6277.7340	6734.8360	7281.9150	7633.6880	8188.4250

Probability Spawning Stock Biomass Exceeds Threshold 60.074 (1000 MT)

Year	Probability
2012	0.150000
2013	0.183790
2014	0.280850
2015	0.388160

Probability Threshold Exceeded at Least Once = 0.4248

Probability Total Fishing Mortality Exceeds Threshold 0.3100

Year	Probability
2012	0.012000
2013	0.001010
2014	0.000000
2015	0.000000

Probability Threshold Exceeded at Least Once = 0.0120

Mid-Atlantic Fishery Management Council (Council)
Summer Flounder, Scup, and Black Sea Bass Fishery Performance Reports (FPR)
June 2012

The Council's Summer Flounder, Scup, and Black Sea Bass Advisory Panel met jointly with the Atlantic States Marine Fisheries Commission (Commission) Summer Flounder, Scup, and Black Sea Bass Advisory Panels on June 27, 2012 to review fishing information documents for all three species and develop fisheries performance reports based on advisor perspectives on these fisheries.

The following Council advisors attended the meeting: Robert Allen, Rick Bellevance*, Carl Benson, James Cicchitti, Greg DiDomenico*, Harry Doerte, Skip Feller*, James Fletcher, James Lovegren*, Adam Nowalsky, Joe O'Hara, A. Ross Pearsall, and Thomas Siciliano.

The following Commission advisors attended the meeting: Rick Bellevance*, Greg DiDomenico*, Skip Feller*, Frank Folb, Paul Forseberg, Mark Hoffman, James Lovegren*, James Tietje, and Bill Shillingford.

*Serve on both Council and Commission Advisory Panels.

Summer Flounder

Market Issues

For summer flounder, the higher prices that have been seen in recent years may be due to more restrictive management measures in the New England groundfish fishery. It was noted that without a constant supply for the commercial market, substitutes enter and erode the market. The big increases and decreases in landings limits have made the market tumultuous. There should be a multi-year plan for setting landings limits to provide some stability, allowing commercial and recreational fisheries to know what to expect each year. The current way measures are being set is not a way a business should be run. There aren't any one year business plans.

There are members of the Scientific and Statistical Committee (SSC) with socio-economic backgrounds, but there has not been enough discussion about economic impacts. The decisions on quotas and harvest limits should be made with consideration of optimum yield (OY). If more consideration was given to the economic impacts, it may demonstrate that a slow economy results in less fishing effort and associated catch. Adjustments to management measures could be made to increase fishing effort which would have a positive impact on coastal communities and the national economy. A greater focus and emphasis should be placed on these socioeconomic impacts. The advisory panel should be more formally organized and provide better and more formal input, similar to how things are done at the New England Fishery Management Council or Commission, where the panel has meetings outside the organization capabilities of the Council. The AP can be better utilized and leveraged to inform the process. There were concerns that the more formal and organized AP process used by the New England Council has been used to the panel members' advantage, and in some cases has resulted in self-serving behavior or disproportionate influence. .

Environmental and Ecological Issues

For summer flounder, the range may be extending farther North. In addition, warmer water temperatures have resulted in fish moving to the North and the East. The fishery is changing, and similarly the migratory patterns are changing. These changes may also be driven by a stronger population now that the stock is rebuilt; every age-structure is represented now whereas older fish were not seen when the stock was at lower levels in the 1980's and early 1990's. It was noted that landings during this earlier time period were lower in part because fishermen chose not to fish because the catch per unit effort was low.

Increased numbers of smaller fish (12-14 inches) are being observed in Rhode Island and in areas farther to the east where they weren't previously observed. The population itself is likely distributed with about 50 percent North of Hudson Canyon and the other 50 percent to the South. Approximately 70% of the allocation is to the states from New Jersey to North Carolina, which sets up a bit of an overfishing situation in the southern areas.

It is unclear whether the observed distributional differences in the summer flounder population are due to range expansion, due to changing water temperature, or population expansion as the stock has rebuilt.

The three most recent winters have been extremely variable, at warm and cold extremes, and this may affect the information that is being gathered and evaluated.

The predation mortality of age-0 fluke due to spiny dogfish is very high. In addition, the striped bass stock could be the cause of the lower recruitments in recent years. The stock assessment scientists should examine these interactions in more detail. Single species management has resulted in impacts on other species (e.g., black sea bass are affecting lobsters, etc.) that are not being considered. The increase in the spiny dogfish population has been a major factor affecting resources in the Northeast.

Management Issues & Management Induced Effort Shifts

Fishermen follow the catch-per-unit effort and may steam a distance for better catch rates; essentially, it makes better economic sense to follow the catch rates.

In North Carolina waters, the management measures in place which include the turtle excluder device (TED) regulations have made it economically unfeasible to fish there. It is more economical to fish off New Jersey and catch scallops (where the abundance is high) and summer flounder, and then return to North Carolina to land the fish. The regulations have made it such that fishermen must leave their home ports, causing frustration because there may be fish to the south that are being underutilized. North Carolina has a mix of summer and southern flounder, so there is difficulty in knowing which are being landed. TED regulations do not apply above the boundary line in Virginia; therefore, fishermen stay to catch flounder off New Jersey while they are there for scallops, rather than deal with additional regulations to the South.

It was suggested that the fishing effort in the southern areas is lower, so an expansion in range or abundance may not be well-reflected here. It was also noted that fishermen are fishing in areas to the North because the fish aren't available in the southern areas in the same abundance.

For the recreational fishery, discard mortality is an area for improvement for management. Commercial fishing practices have improved and reduced discard mortality. For the hook and line recreational fishery, the discard mortality rate is about 10 percent for summer flounder. Millions of fish are dead due to this mortality. Those fish are not available for future harvest, and do not spawn and contribute to spawning stock biomass (SSB). There are some techniques that result in higher numbers of gut hooked fish, essentially resulting in the hook being ripped out of the stomach of fish. Unattended fishing poles and fishing more than one pole may contribute to this problem. Fishermen should be cutting the hooks for these gut hooked fish, but most are thrown back dead. Large numbers of these fish are small. Fishermen are frustrated by the number of short fish that are caught and thrown back. For some fishermen, a 5-o hook does not result in catches of many under 14 inch fish early in year, until the smaller fish move into nearshore areas. A 2-o is what is primarily used by fishermen. An education program addressing hook size and techniques needs to be conducted. Managers should be educated as to whether it makes more sense to keep these smaller fish, even though they haven't spawned, than to throw them back dead. Wide-gap hooks and 5-o hooks were discussed by advisors in past years. Wide gap hooks do not produce gut hooked summer flounder. The use of barbless hooks may also reduce the discard mortality. Fishermen should take the steps to affect their fisheries positively with respect to gear and fishing practices even if the measures are on the regulations.

There were fewer landed fish in 2010 than in 1989. The rate of release is a larger issue than is characterized by MRFSS/MRIP. In recent years, fishermen have been killing 1.53 fish to keep 1 fish, given a 10 percent discard mortality applied to total numbers discarded. The percent of released fish in recent years is over 90 percent. The mean weight for summer flounder has continued to increase from about 1 lb in 1981 to over 3 lb in 2011, while the mean weight of a fish landed in the commercial fishery has averaged 2.2 lb since 2007. Sixty percent of the summer flounder fishery (commercial fishery) results in a mean weight of 2.2 lb/fish, with the recreational 40 percent averaging 3.35 lb/fish in 2011. The discard rate was 94 percent in 2010. At a release mortality rate of 10 percent, recreational fishermen killed an additional 1.53 fish for each keeper. If a lower average weight was used, states would receive a larger quota in numbers, and be able to manage their fisheries with lower minimum sizes and less restrictive regulations. Discards would be reduced. The age classes landed in the recreational fishery have shifted to ages-3, 4, and 5. The larger more fecund summer flounder are being landed. If a lower average weight was used, states would receive a larger quota in numbers, and be able to manage their fisheries with lower minimum sizes and less restrictive regulations. There are few male summer flounder over 19 inches. The fishery on the recreational fishery is targeting female fish. Many of the New England commercial vessels are using a 6 or 6.5 inch meshes in their trawls for groundfish, which results in larger summer flounder (females) being targeted in the commercial fishery as well. Something needs to be done by managers to enable targeting of the males, and prevent the fastest growing females from being targeted. There is a threshold at which the minimum size gets so large that the resulting discard rates become counterproductive. Managers should allow a certain number of gut hooked fish to be kept (cut line in gut hooked fish). The discard rate is conservative and is a low number. The advisors are concerned about the number

of fish being thrown back. It is important to get scientists to weigh in on how important these issues are for this stock.

The managers and scientist do not know how to convert hooking release and discards into mortality. The scientists are limited in their knowledge and education and the input they provide to the SSC. After 1990, the Northeast Fisheries Science Center information changed. The fishery scientists aren't acknowledging what the fishermen are telling them. A 5-inch trawl mesh with full retention of all landings, with a vessel length based trip limit would allow the commercial fishermen to be economically viable.

General Fishing Trends

The changes in regulations on the recreational side are difficult to manage. The recreational data is more difficult and variable to use to manage the fishery, particularly on an annual basis. Looking for trends in the recreational catch and landings information is important because of this variability and limited amount of information (data points) to characterize what is happening to the stock and fishery. The trends are more reliable than individual data points.

The commercial fishery is more likely to utilize their quota because of the data collection system and management measures that are in place. The recreational catch is in large part driven by economic and other factors that are more likely affect the catch, regardless of what the quota is. For example, the recreational fishery is more constrained by weather conditions, particularly on weekends. There may be some recoupment of fishing activity during the week, but it is unlikely to equal all of the effort that was lost due to poor weather conditions. Fish availability also drives the recreational landings patterns; it may be a better indicator of fish availability than commercial sector catch rates. Recreational fishing may also be affected by reports of fishing activity. If there are good reports, fishermen go fishing. High costs are keeping fishermen at home, unless the fishing is going to be very good. Because of the high fuel costs and other constraints, fishermen are not going fishing. Economic issues for the recreational fisheries such as fuel prices, boat maintenance costs, and empty slips are important factors to be considered.

The increase in summer flounder minimum fish size has reduced the participation of shore-based anglers in the fishery.

Scup

Market Issues

Advisors wonder if a cross reference/comparison of the price of scup versus price of tilapia has been conducted. When the scup commercial fishery was very restrictive, the tilapia product entered the market and now the tilapia price is driving the price of scup. Tilapia has taken over the market shares that were previously filled by scup.

There are market issues that affect the affect landings patterns of scup. Prices have been down since the trip limit increased. In the past, the price could be over $2/lb for scup, in recent years it is rarely $1/lb. The fresh fish market can only absorb a certain number of fish. Processors are

trying to set up a base, but the market is not particularly strong. Some fish are going to processors, others to the markets. The trip limits in Winter II may be constraining landings in that period. A state like New Jersey is focused on Winter I, so the Winter II fishery trip limits are not as important. For other areas it may be. Smaller trip limits also result in higher discards, as it is difficult to catch just a few thousand pounds of scup. In Rhode Island, September/October fishery is primarily prosecuted with pots, so the trip limits are not constraining during that time period. The trawlers/draggers would want a higher trip limit in November/December (Winter I).
The price of scup is decreasing commercially, but recreational party boats are still tied to the dock as a result of the smaller possession limits.
The price of scup is decreasing commercially, but recreational party boats are still tied to the dock as a result of the smaller possession limits.

The ethnic groups of fishermen are being excluded from this fishery as a result of the regulations. The people who have eaten fish with bones in them have died off, and the persons who are eating large fileted fish have gone up due to the current size limits. The management system has resulted in extensive waste of product, with a large portion of the fish being unutilized. The higher price of fish is good for the fishermen, but is it good for the consumer? Scup management has driven consumers to Tilapia.

Environmental and Ecological Issues

Many of the issues described for summer flounder in terms of changes in fish distribution and the most recent 3 variable winters also apply here. The statistical areas that are dominant for producing commercial landings will be different this year. Scup were further east and north, and inshore longer in response to the warmer water temperatures. They were found in these areas in large numbers. There is some disagreement as to whether the stock is declining. One viewpoint is that the scup population is on the downward trend, contrary to the stock assessment information because commercial fishermen are not seeing scup in the large numbers suggested. Other think this may be a dispersion issue, and the scup stock is distributed in areas it hasn't been before. Scup are being found at other depths and time periods than they would normally be found. Large scup are being found in the winter, offshore; and fishermen are catching scup instead of cod and groundfish. It is noted that the trawl survey can be highly variable and may not be the best indicator of the trend in any year.

Cape May and Port Judith were historically areas in which fisheries for scup operated and were large areas for scup landings for 50 years. Cape May is not even in the top 10 ports for scup. Something has changed in the distribution/abundance which is affecting those landings patterns. Scup are no longer seen or caught commercially in these southern areas, down towards Wilmington canyon, where a fishery had historically operated. In New Jersey, large scup have been seen in the spring in inshore waters out to 15 fathoms recently. It has not been uncommon to catch some jumbo scup in the spring in the last 3 years.

For the commercial fishery, the recent inability to catch all the landings could be access related. Are the scup on hard bottom or other areas not accessible to the commercial fishery? It is not clear.

Scup and black sea bass are very dense and are eating large numbers of lobster.

Management Issues & Management Induced Effort Shifts

Recreational for hire vessels (party/charter) are not able to utilize the scup resource. This does not necessarily suggest that a shift in allocation is needed, but there may be a creative way to utilize some of that resource. The bonus fishing season (in states waters with higher possession limits) is driving the party/charter participation and landings. Recreational anglers (private) think a possession limit of 10 fish is okay, but the party boats tend to be more directed and specific in their anglers and needs. Private anglers likely aren't directing/targeting scup, but are catching them when targeting other species; however, for a party/charter vessel, it is very important to see the higher possession limits.

No one has told recreational fishermen how to avoid fishing for species when their seasons are closed. An incidental catch limit in the recreational fishery for scup would be a way to reduce mortality during closed seasons (e.g., maybe 1 fish as a bycatch). This is similar to what was used for tautog, where 1 fish was allowed to be retained during a portion of the fishing season. A separation of the measures applied for the for-hire versus the private fishery could address the different need of these groups. Red drum in North Carolina, for example, has a bycatch fishery where X number or pounds of red drum can be retained as long as you have X amount of other species also retained (e.g., some fraction of the total catch are allowed to be retained). The bycatch in the recreational fishery is primarily in the winter season in 100-500 feet of water. This bycatch is predominantly in the party/charter fishery and some of these approaches would be a way to reduce the discard rate; however, other modes (private and shore-based anglers) should not be excluded from this type of approach.

General Fishing Trends

The purpose of fishing for scup recreationally is different than for many other species. The purpose of fishing for scup tends to be for food and there is a large ethnic component to this fishery. This difference may not be reflected in summaries of reasons for fishing for all Northeast fishermen for all species combined.

Other Issues

Discards should be turned into landings in the commercial fishery (by reducing the minimum size from 9 inches to 8 inches) to reduce discard mortality given scup are fully mature by 8 inches.

Black sea bass

Market Issues

The "high end" black sea bass commercial market was ruined when all the fishing closures/restrictions went into effect. The collapse of the red snapper fishery in the Gulf has helped raise the price in the black sea bass market. For large and jumbo fish, the market wasn't

what it should have been this past year. This year, a large influx of small fish into the New York market (from the Gulf and South that were closed) early in the year (April) took the prices of the medium fish to lower levels.

Environmental and Ecological Issues

The best available science, as conducted by Moser on Shepherd with a tagging study examining fish migration, suggest there are two different management units (i.e., one North of Hatteras and one South of Hatteras). However the study suggest there may be multiple sub-groups of fish within the Northern management unit that exhibit different migratory patterns (e.g., a black sea bass caught in 60 feet in Maryland, wouldn't likely show up in 20 feet in Massachusetts). The component of the population that is found offshore in the wintertime and inshore in Massachusetts in the summertime has expanded and is very abundant. This is supported by the catch and landings patterns in the commercial and recreational fisheries. The inshore fishery hasn't seen the same population explosion/expansions. The MA-DMF data suggest there may be slightly higher growth rates for their fish when compared to fish from other areas, which suggests it may be a different group. Black sea bass been managed on a coastwide basis, but more of a regional or state basis may be appropriate given this research. This information reiterates how important an examination of the state-by-state data are. In Virginia, fuel prices have meant that the for-hire fleet has dominated the fishery because the fish are found further offshore. In more Northern states, black sea bass is caught in more nearshore waters.

In Massachusetts, the commercial fishery has been taking their quotas very quickly. The Massachusetts commercial quota is allocated by gear type, and each gear-based fishery has closed quickly. The Moser and Shepherd study migration patterns mimic what the fishermen are seeing in terms of fish distribution/availability. There are distinct differences between the inshore Virginia fishery and the fish abundance in the inshore areas near Morehead City, North Carolina. There used to be large numbers of large black sea bass at the Chesapeake Bay Bridge Tunnel. Some recreational fishermen are catching some black sea bass at the rocks around the tunnels. Others indicate they aren't seeing that many black sea bass in the area.

Scientific uncertainty is the reason why the catch limits are reduced substantially from the OFL. The issue of the life history strategy (protogynous hermaphrodites), has been a major issue in terms of uncertainty. Some research is being done by Rutgers to examine changes in sex and timing of those sex changes. Recaptures have shown that some black sea bass are showing up on the same wrecks in different years. During the Shepherd tagging study, 2 of the fish tagged on a wreck were caught in the same location 22 months later (with consecutive tag numbers). It is thought that the fish moved offshore and then returned to the exact same locations.

The distribution of eggs/larvae is influenced by circulation which would not result in black sea bass larvae consistently settling in the same areas each year.

Black sea bass lends itself well to enhancement, and enhancement approaches have not been discussed for this stock or others. A strong artificial reef program has been set up off South Carolina and has resulted in a large numbers of black sea bass in these inshore reefs.

Dogfish predation is an issue for black sea bass, and multi-species dynamics should be considered. In the 2009-2011 fishing years, areas have had large numbers of dogfish wreaking havoc with the black sea bass population. If there are more dogfish out there than scientists predict, this may explain some of the dynamics being seen for black sea bass and other fish species.

Management Issues & Management Induced Effort Shifts

In North Carolina, the management unit boundary is Cape Hatteras. This boundary is a concern for fishermen in this region, and advisors acknowledge that the fish mix to some degree in these areas.

The stock is fully rebuilt, when will the quotas be increased? The current levels of quota for the black sea bass fisheries (recreational and commercial) are constraining.

The discard mortality rates in shallow waters are different than in deeper waters (i.e., higher in deep waters greater than 30 feet). The mortality rate is very high in deep waters, and fishermen are throwing back more fish than are being kept with a very high mortality rate. The number of fish thrown back needs to be reduced and fishermen should be able to retain more fish. Most of the fish in New York /Northern New Jersey are in the 12-13 inch range, so the number of fish thrown back is very high. Consideration should be given to reducing the size limit, and hopefully improving stock productivity so the quota can be increased.

The Rutgers study described above tagged fish, many of which were in 60 feet of water. From this study, some discard mortality results will be produced as a secondary outcome of that research project. Inshore of 15 fathoms the discard mortality rate is very low. How many fish would be caught if all fish were retained (retention rate in numbers and poundage)?

Venting techniques were discussed and are required in the Gulf, but there is generally mixed and inconclusive evidence of its effectiveness. It is unclear whether or not those approaches are worthwhile for use in the Northeast.

The areas of New Jersey and South should be regionalized for the recreational black sea bass fishery.

For the headboat and party boat industry, there should be a multi-year approach to management to provide stability for trip planning and advance business planning.

A common sense approach needs to be applied to the management of black sea bass and consideration should be given to shifts in fishing effort. The closure of one fishery may impact another fishery resulting in unanticipated effort shifts that might negatively impact other fisheries.

General Fishing Trends

From 2004-present, private recreational anglers have been responsible for a larger proportion of black sea bass landings. This is a shift in how the fishery was being prosecuted in the past where party/charter mode landings were dominant. This may be due to an increase in popularity and access to the black sea bass recreational fishery. Differential GPS has made access to the fishery easier for the private angler.

Other Issues

Research priorities have been set in the Northeast, and the Council should continue to push for tier 4 stocks (data poor stocks) to get the research needed to move out of tier 4.

Mid-Atlantic Fishery Management Council

Summer Flounder AP Information Document[1] - June 2012

Management System

The Fishery Management Plan (FMP) for summer flounder became effective in 1988. The FMP established the management unit for summer flounder (*Paralichthys dentatus*) as the U.S. waters in the western Atlantic Ocean from the southern border of North Carolina northward to the U.S.-Canadian border, and established measures to ensure effective management of the summer flounder resource. There are two management entities that work cooperatively to develop fishery regulations for this species: the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fishery Management Council (MAFMC), in conjunction with the National Marine Fisheries Service (NMFS) as the federal implementation and enforcement entity. 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. Summer flounder was under a stock rebuilding strategy and was declared rebuilt in 2012. The Summer Flounder FMP, including subsequent Amendments and Frameworks, are available on the Council website at: http://www.mafmc.org/fmp/fmp.htm

Basic Biology

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

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. Planktonic larvae are often found in the northern part of the Middle Atlantic Bight from September to February and in the southern part from November to May. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Summer flounder exhibit strong seasonal inshore-offshore movements. Adult flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the colder months.

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

Their habitat includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas, from the Gulf of Maine through North Carolina. Summer flounder may be found on the bottom habitats, but may also be found up in the water column. They are opportunistic feeders, eating whatever food is convenient and available, and feed mostly on a variety of fish and crustaceans. While the natural predators of adult summer flounder are not fully documented, larger predators (e.g., large sharks, rays, and monkfish) probably include summer flounder in their diets.

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

Status of the Stock

An age-structured assessment program (ASAP) was used in the 2008 peer-reviewed summer flounder stock assessment (47^{th} Stock Assessment Workshop; NEFSC 2008). The ASAP model has been the basis for the last four assessment updates. 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 Data Poor Stocks Working Group (DPSWG) reports and peer-review panelist reports are available online at the NEFSC website: http://www.nefsc.noaa.gov

The most recent assessment update, published in October 2011 (Terceiro 2011), indicated that the summer flounder stock was not overfished or subject to overfishing in 2010, relative to the reference points established in the SAW 47 assessment. The October stock assessment update indicated that fishing mortality (F) for 2010 was estimated to be 0.216, below the reference point F_{MSY} = 0.310 (Figure 1). Spawning Stock Biomass (SSB) was estimated to be 132.8 million lb (60,238 mt), above the rebuilding target SSB_{MSY} = 132.4 million lb (60,074 mt; Figure 2). Thus, the stock is rebuilt and no longer subject to the formal rebuilding program in place since 2000.

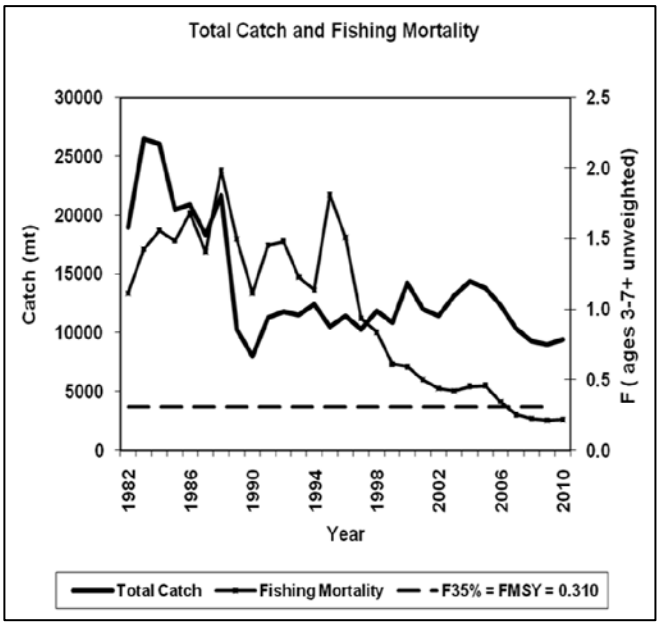

Figure 1. Total fishery catch and fishing mortality rate (F, ages 3-7+) for summer flounder. F35% is the proxy for FMSY. Source: Terceiro 2011.

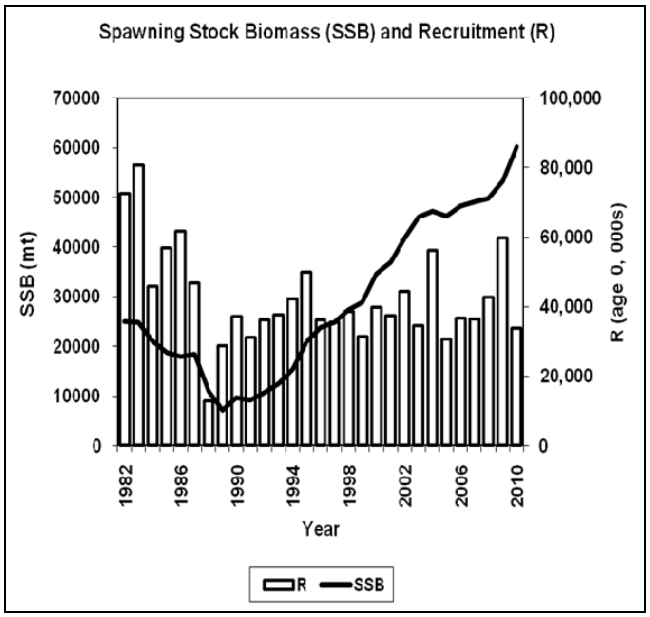

Figure 2. Spawning Stock Biomass (SSB) and Recruitment (R, age 0) by calendar year. Source: Terceiro 2011.

Fishery Performance

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

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for summer flounder. Permit data for 2011 indicates that 931 vessels held commercial permits for summer flounder. Total (commercial and recreational) landings declined in the early 1980's to a low of 14.4 million lb in 1990, and in 2011 were about 23 million lb total (Figure 3).

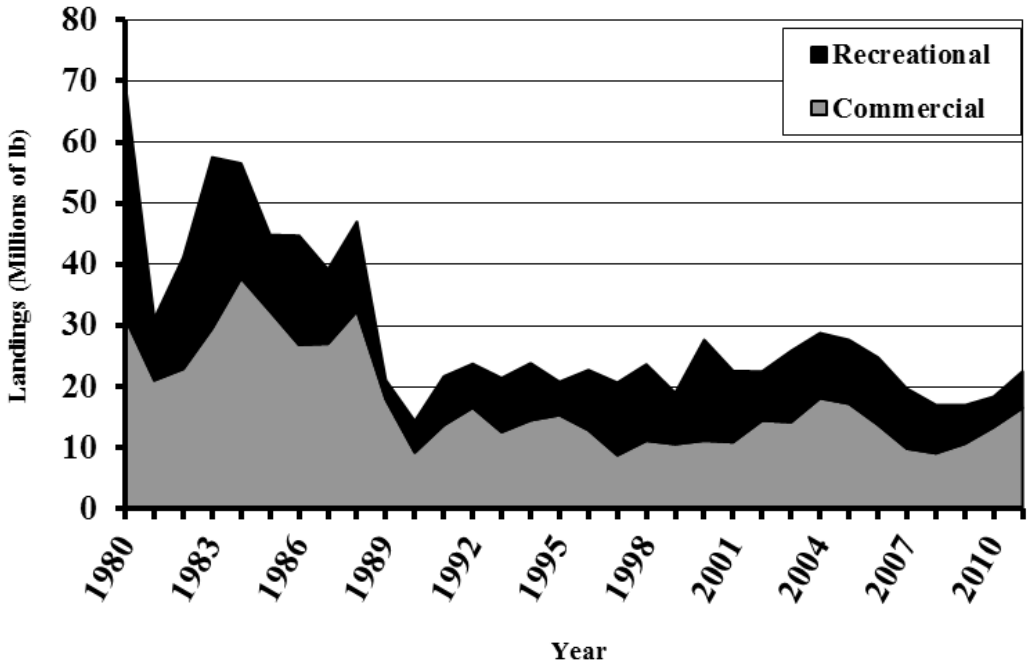

Figure 3. Commercial and Recreational U.S. Summer Flounder Landings (Pounds) from Maine-North Carolina, 1980-2011.

Table 1 summarizes the summer flounder management measures for the 2003-2012 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2009, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest).

Table 1. Summary of summer flounder management measures and landings for 2003 through 2012.

Management measures	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
ABC (m lb)	NA	NA	NA	NA	NA	NA	21.50	25.5	33.95	25.58
TAC (m lb)	NA	NA	NA	NA	NA	NA	20.90	25.5	33.95	25.58
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00
Com. quota-adjusted (m lb)[c]	13.87	16.76	17.90	13.94	9.79	9.32	10.74	12.79	17.38	12.73
Com. landings	14.22	18.14	17.25	13.81	9.90	9.13	10.69	13.41	16.57	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.58
Rec. harvest limit-adjusted (m lb)[c]	9.28	11.21	11.98	9.29	6.68	6.21	7.16	8.59	11.58	8.49
Rec. landings	11.64	10.87	10.58	11.55	9.86	7.90	6.30	4.97	5.96	NA
Com. fish size (in)	14	14	14	14	14	14	14	14	14	14
Com. Min. mesh size (in, diamond)	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]	5.5[a]
Recreational measures	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]	CE[b]

[a]Whole Net. [b]State-specific conservation equivalency (CE) measures. [c]Adjusted for Research Set-Aside and projected discards. NA=Not applicable or not yet available.

The commercial quota is divided among the states based on the allocation percentages given in Table 2, and each state sets measures to achieve their state-specific commercial quotas.

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

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

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

Table 3. Statistical areas that accounted for at least 5 percent of the summer flounder catch in 2011 and associated number of trips, NMFS VTR data.

Statistical Area	Summer Flounder Catch (percent)	Summer Flounder Trips (N)
616	21.15	793
537	14.45	1693
626	10.98	310
622	10.75	304
612	8.19	2813
613	5.73	2459
621	5.51	584

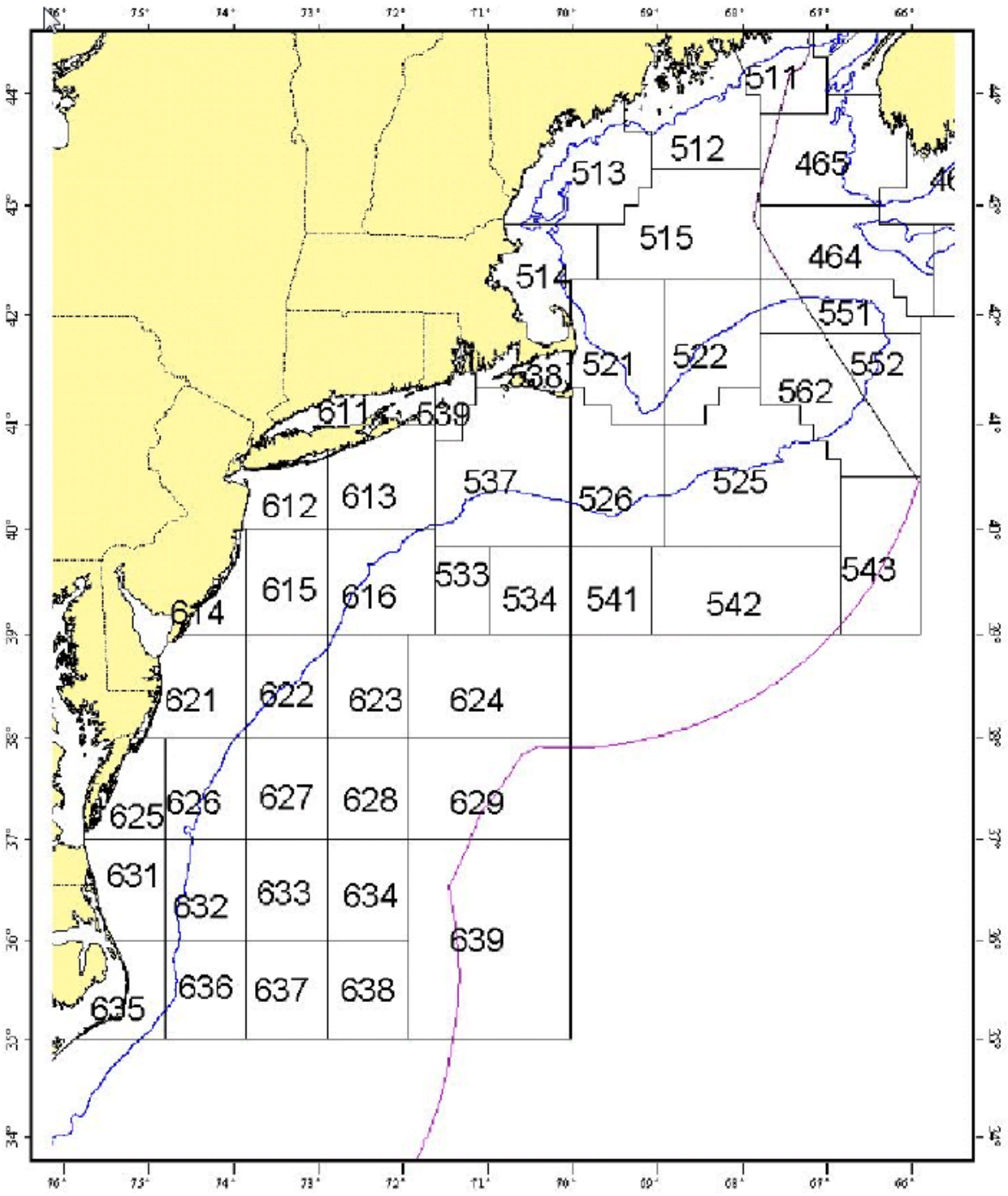

Figure 4. NMFS Statistical Areas.

Based on VTR data for 2011, the bulk of the summer flounder landings were taken by bottom otter trawls (96 percent), with other gear types (e.g. hand lines and beam trawls) each accounting for less than 1 percent of landings. Current regulations require a 14 inch total length minimum fish size in the commercial fishery and a 5.5 inch diamond or 6

inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder, i.e., 200 lb in the winter and 100 lb in the summer. Summer flounder ex-vessel revenues based on dealer data have ranged from $14.3 to $27.4 million for the 1994 through 2011 period. The mean price for summer flounder (unadjusted) has ranged from a low of $1.34/lb in 2002 to a high of $2.39/lb in 2008 (Figure 5). In 2011, 16.6 million pounds of summer flounder were landed generating $29.9 million in revenues ($1.80/lb).

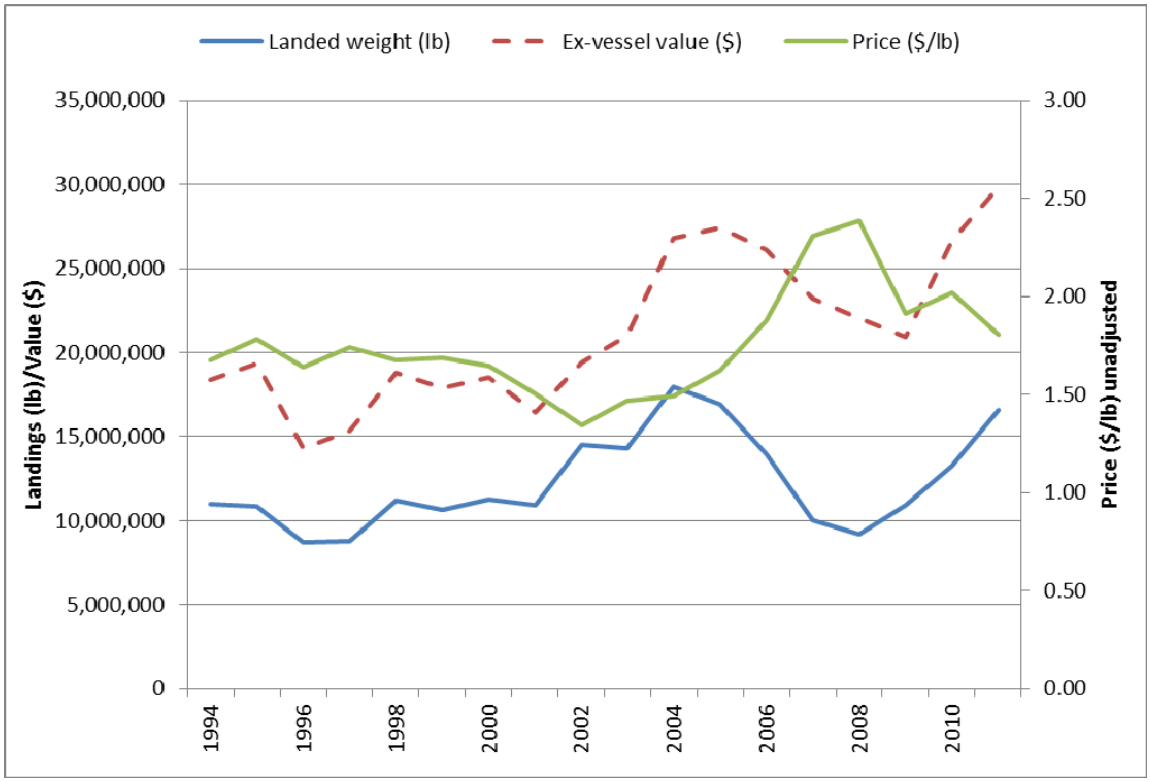

Figure 5. Landings, ex-vessel value, and price (unadjusted) for summer flounder, Maine through North Carolina, 1994-2011.

The ports and communities that are dependent on summer flounder 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/

To examine recent landings patterns among ports, 2011 NMFS dealer data are used. The top commercial landings ports for summer flounder by pounds landed are shown in Table 4. A “top port” is defined as any port that landed at least 100,000 lb of summer flounder. Related data for the recreational fisheries are shown in subsequent sections. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels.

Table 4. Top ports of landing (in lb) for summer flounder (FLK), based on NMFS 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 FLK (lb)	# FLK Vessels
PT. JUDITH, RI	2,443,489	117
NEWPORT NEWS, VA	2,195,166	44
HAMPTON, VA	1,723,032	48
WANCHESE, NC	1,276,173	31
PT. PLEASANT, NJ	1,116,575	41
CAPE MAY, NJ	783,800	53
MONTAUK, NY	662,762	71
CHINCOTEAGUE, VA	657,941	31
NEW BEDFORD, MA	573,826	84
BELFORD, NJ	534,740	20
ORIENTAL, NC	408,044	11
ENGELHARD, NC	400,301	12
BEAUFORT, NC	334,725	9
BARNEGAT LIGHT/LONG BEACH, NJ	312,815	35
STONINGTON, CT	299,970	22
HAMPTON BAY, NY	285,021	38
OCEAN CITY, MD	228,720	22
FALMOUTH, MA	201,615	23
LOWLAND, NC	169,421	6
SWAN QUARTER, NC	141,100	3
MATTITUCK, NY	138,962	4
NANTUCKET, MA	135,343	15

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (52) who bought summer flounder in 2011 (Table 5). All dealers bought approximately $29.9 million worth of summer flounder in 2011.

Table 5. Dealers reporting buying summer flounder, by state in 2011.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Other
	33	41	10	52	29	C	4	20	27	0

Note: C = Confidential.

Recreational Fishery

There is a significant recreational fishery for summer flounder in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. To manage this fishery, state-specific conservation equivalency was developed and has been used every year since 2001 (Table 1). Under conservation equivalency, state-specific measures are developed through the ASMFC which are submitted to NMFS. NMFS may waive the coastwide regulation in Federal waters, and make those fishermen fishing in Federal waters subject to the measure in the state in which they land, if NMFS consider the combination of the state specific measures to be "equivalent" to the coastwide measures. The 2012 recreational fishing measures are given in Table 6.

Table 6. Summer flounder recreational fishing measures in 2012, by state, under conservation equivalency.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16.5	5 fish	May 22-September 30
Rhode Island	18.5	8 fish	May 1-December 31
Connecticut*	18	5 fish	May 15-October 31
*At 44 designated Shore sites	16		
New York	19.5	4 fish	May 1-September 30
New Jersey	17.5	5 fish	May 5-September 28
Delaware	18	4 fish	January 1-October 23
Maryland	17	3 fish	April 14-December 16
Potomac River Fish. Commission	16.5	4 fish	All year
Virginia	16.5	4 fish	All year
North Carolina	15	6 fish	All year

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 1983 and were at the lowest levels in 1989 (Table 7).

Table 7. Recreational summer flounder landings data from the NMFS recreational statistics databases, 1981-2011.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	13,579	9,567	10,098
1982	23,562	15,473	18,264
1983	32,062	20,996	28,008
1984	29,785	17,475	18,837
1985	13,526	11,066	12,490
1986	25,292	11,621	17,874
1987	21,023	7,865	12,228
1988	17,171	9,960	14,658
1989	2,677	1,717	3,176
1990	9,101	3,794	5,142
1991	16,075	6,068	8,158
1992	11,910	5,002	7,157
1993	22,904	6,494	8,844
1994	17,725	6,703	9,347
1995	16,308	3,326	5,422
1996	18,994	6,997	9,861
1997	20,027	7,167	11,891
1998	22,086	6,979	12,523
1999	21,378	4,107	8,385
2000	25,384	7,801	16,515
2001	28,187	5,294	11,660
2002	16,674	3,262	8,029
2003	20,532	4,559	11,663
2004	20,336	4,316	11,061
2005	25,806	4,027	10,960
2006	21,400	3,950	10,756
2007	20,732	3,108	9,257
2008	22,897	2,350	8,151
2009	24,085	1,806	6,023
2010	23,722	1,501	5,122
2011	21,559	1,840	5,963

When anglers are intercepted through the surveys conducted for the recreational statistics programs, they are asked about where the majority of their fish were caught (i.e., inland, state waters (<=3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of summer flounder are landed recreationally, and indicate that about 90 percent of the

landings (in numbers of fish) occur in state waters (Table 8). The states of New Jersey and New York land the majority of fish, followed by North Carolina (Table 9).

Table 8. Percentage of summer flounder recreational landings (MRIP Type A+B1 in number of fish) by year and area, Maine through North Carolina, 2002-2011. These area information are self-reported based on the area where the majority of fishing activity occurred per angler trip.

	Summer Flounder	
Year	**State <= 3 mi**	**EEZ > 3 mi**
2002	89.4	10.6
2003	91.7	8.3
2004	87.7	12.3
2005	81.2	18.8
2006	90.4	9.6
2007	88.9	11.1
2008	96.8	3.2
2009	90.8	9.2
2010	92.3	7.7
2011	95.4	4.6
Avg. 2002-2011	89.7	10.3
Avg. 2009- 2011	92.8	7.2

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

State	2010	2011
Maine	0.0	0.0
New Hampshire	0.0	0.0
Massachusetts	3.0	3.2
Rhode Island	7.9	8.8
Connecticut	2.3	2.6
New York	22.3	20.4
New Jersey	36.8	40.0
Delaware	3.6	3.6
Maryland	0.0	0.0
Virginia	1.7	0.8
North Carolina	17.3	17.3
Total	**100%**	**100%**

In 2011, there were 845 recreational vessels (i.e., party and charter vessels) that held summer flounder Federal recreational permits. Many of these vessels also hold recreational permits for scup and black sea bass. Landings by mode indicate that private/rental fishermen are responsible for the majority of summer flounder landings (Table 10).

Table 10. The number of summer flounder landed from Maine through North Carolina by mode, 1981-2011.

	Mode		
Year	**Shore**	**Party/Charter**	**Private/Rental**
1981	3,145,683	1,362,252	5,058,639
1982	1,120,521	5,936,006	8,416,173
1983	3,963,680	3,574,229	13,458,398
1984	1,355,595	2,495,733	13,623,843
1985	786,185	1,152,247	9,127,759
1986	1,237,033	1,608,907	8,774,921
1987	406,095	1,150,095	6,308,572
1988	945,864	1,134,353	7,879,442
1989	180,268	141,320	1,395,177
1990	261,898	413,240	3,118,447
1991	565,404	597,610	4,904,637
1992	275,474	375,245	4,351,387
1993	342,225	1,013,464	5,138,352
1994	447,184	836,362	5,419,145
1995	241,906	267,348	2,816,460
1996	206,927	659,876	6,130,182
1997	255,066	930,633	5,981,121
1998	316,314	360,777	6,302,004
1999	213,447	300,807	3,592,741
2000	569,612	648,755	6,582,707
2001	226,996	329,705	4,736,910
2002	154,958	261,554	2,845,647
2003	203,717	389,142	3,965,811
2004	200,368	463,776	3,652,354
2005	104,295	498,614	3,424,557
2006	154,414	315,935	3,479,934
2007	98,418	499,160	2,510,000
2008	79,339	171,951	2,098,583
2009	62,691	176,997	1,566,490
2010	59,812	160,109	1,281,546
2011	34,849	137,787	1,667,240
% of Total, 1981-2011	9%	14%	77%
% of Total, 2007-2011	3%	11%	86%

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

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

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

Table 12. Purpose of Marine Recreational Fishing in the Northeast.

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

Source: Steinback et al., 2009.

References

Bolz, G.R., J.P. Monaghan Jr., K.L. Land, R.W.Gregory, and J.M. Burnett, Proceedings of the summer flounder aging workshop, 1-2 February 1999, Woods Hole, Massachusetts. NOAA Tech. Mem. NMFS-NE-156, 15 p.

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 Fisheries Science Center. 2008. 47th Northeast Regional Stock Assessment Workshop (47th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 08-12a; 335 p. Available at: http://www.nefsc.noaa.gov/publications/crd/crd0812/

Packer, D. B, S. J. Griesbach, P. L. Berrien, C. A. Zetlin, D. L. Johnson, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-151

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 Summer Flounder for 2011. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 11-20; 141 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/