

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: Jim Armstrong

SUBJECT: Bluefish 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) Bluefish Stock Assessment Update
- 5) Bluefish Fishery Performance Reports
- 6) Bluefish Advisory Panel Information Document

July 27, 2012

Bluefish Monitoring Committee Recommendations for 2013, 2014

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

Discussion: The Committee received an overview of the presentation provided to the SSC the prior day and was provided with the SSC recommendations for ABC in 2013 and 2014. The Committee discussed the various sources of management uncertainty in considering an adjustment from ACL to the fishery-specific ACTs.

The sources of uncertainty considered by the Bluefish Monitoring Committee include:

<u>"Forecast" of recreational landings and discards</u> – Typically forecasts of recreational landings and discards are averages of the most recent three years. Measures based on those averages assume that recreational fishery catch will be consistent with that average. The Committee analyzed the history of catches (landings + discards) compared to running three year averages and found that since 2000, the average catch in a given year was about 5% less than the average of the previous three years. Additionally, discards as a proportion of total catch have averaged about 20% and no trend is evident. Based on these observations, the Committee agreed that use of these running averages provided an adequate basis for management measures in the upcoming 2013 and 2014 fishing years and that there is no need for an additional "buffer" to account for this source of management uncertainty.

<u>History of management effectiveness</u> – The Committee discussed the history of fishery landings relative to harvest limits. It was noted that since 2000 the combined commercial and recreational landings exceeded the allowable landings (formerly referred to as the TAL) only once. This occurred in 2007 and was specific to the recreational fishery which landed 113.7% of the RHL (overage of 2.6 M lb). In all other years the combined landings were less than the TAL. The commercial fishery has never exceeded the coastwide quota. Based on this observation, the Committee agreed that combined landings in the upcoming 2013 and 2014 fishing years were likely to be under the harvest limits and therefore under the ACL. The Committee agreed that there is no need for an additional "buffer" to account for this source of management uncertainty.

Calculation of Management Measures for 2013 and 2014.

The Committee reviewed the calculation of the 2013 and 2014 commercial quotas and recreational harvest limits and agreed with the methods used by staff for those measures. This included calculation of the maximum recreational-to-commercial transfer amount that the Council could recommend. To be clear, the Committee is not recommending the maximum transfer, but is in agreement that the calculation of the maximum transfer is correct.

Monitoring Committee Recommendations

The tables below identify the Bluefish Monitoring Committee's recommended management measures for 2013 (top) and 2014 (bottom).

2013 Management Measure	Lbs	mt	Basis		
OFL	38,627,193	17,521	per SSC		
ABC	27,471,802	12,461	Constant F (0.132)		
ACL	27,471,802	12,461	= ABC		
Mgmt Uncertainty	0	0	per MC		
Comm Discards	0	0	from assessment		
Rec Discards	3,611,172	1,638	2009-2011 MRFSS avg.		
Comm ACT	4,670,206	2,118	(ACL - Mgmt Uncert) * 17%		
Rec ACT	22,801,596	10,343	(ACL - Mgmt Uncert) * 83%		
Comm TAL	4,670,206	2,118	Comm ACT - Disc		
Rec TAL	19,190,424	8,705	Rec ACT - Disc		
TAL (combined)	23,860,631	10,823	Comm + Rec TAL		
Expected Recreational Landings	14,068,836	6382	2009-2011 average		
Maximum Transfer	4,686,470	2,126	Calculated		
pre-RSA Comm Quota	9,356,676	4,244	Comm TAL + transfer		
pre-RSA RHL	14,503,955	6,579	Rec TAL - transfer		
Comm RSA Deduction (3%)	280,700	127	3% of Comm Quota		
Rec RSA Deduction (3%)	435,119	197	3% of RHL		
Adjusted Comm Quota	9,075,976	4,117	Comm Quota - RSA		
Adjusted RHL	14,068,836	6,382	RHL - RSA		

2014 Management Measure	Lbs	mt	Basis	
OFL	38,627,193	17,521	per SSC	
ABC	27,057,333	12,273	Constant F (0.132)	
ACL	27,057,333	12,273	= ABC	
Mgmt Uncertainty	0	0	per MC	
Comm Discards	0	0	from assessment	
Rec Discards	3,611,172	1,638	2009-2011 MRFSS avg.	
Comm ACT	4,599,747	2,086	(ACL - Mgmt Uncert) * 17%	
Rec ACT	22,457,587	10,187	(ACL - Mgmt Uncert) * 83%	
Comm TAL	4,599,747	2,086	Comm ACT - Disc	
Rec TAL	18,846,415	8,549	Rec ACT - Disc	
TAL (combined)	23,446,162	10,635	Comm + Rec TAL	
Expected Recreational Landings	14,068,836	6382	2009-2011 average	
Maximum Transfer	4,342,460	1,970	Calculated	
pre-RSA Comm Quota	8,942,207	4,056	Comm TAL + transfer	
pre-RSA RHL	14,503,955	6,579	Rec TAL - transfer	
Comm RSA Deduction (3%)	268,266	122	3% of Comm Quota	
Rec RSA Deduction (3%)	435,119	197	3% of RHL	
Adjusted Comm Quota	8,673,941	3,934	Comm Quota - RSA	
Adjusted RHL	14,068,836	6,382	RHL - RSA	

Additional Recreational Measures

The Bluefish MC recommends status quo recreational possession limit up to 15 fish.

RSA: Up to 3%.

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Christopher M. Moore, Ph.D.

Executive Director

Richard B. Robins, Jr. Chairman

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MEMORANDUM

	DATE:	30 July 2012
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TO:	Richard B. Robins, Jr., Chairman, Mid-Atlantic Fishery Management Council
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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.

1

Bluefish (Excerpt taken from SSC Report)

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.



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M E M O R A N D U M

DATE: July 18, 2012

TO: Chris Moore, Executive Director

FROM: Jim Armstrong

SUBJECT: Bluefish ABC and Management Measures for 2013

Executive Summary

The latest bluefish assessment update (Attachment A) indicates that the bluefish stock is not overfished and that overfishing is not occurring. The estimate of stock biomass (292.972 M lb; 132,890 mt) for 2011 is 90.37 % of B_{MSY} (324,192 M lb; 147,051 mt) and F_{2011} (0.114) is estimated at 60% of F_{MSY} (0.19). Although the assessment characterizes the stock as below B_{MSY} , the stock was officially declared rebuilt in 2009. The staff recommendation is for acceptable biological catch (ABC) = 27,472 M lb (12,461 mt) which is consistent with the P* method for a tier 3 assessment for a species with a typical life history, B/B_{MSY} ratio of 0.8676, and OFL = 17,521 mt. It is also recommended that ACL = ABC and that commercial and recreational Annual Catch Targets (ACTs) are set that sum to ACL and ABC (no reduction for management uncertainty). After adjusting the ACTs for discards (3.610 M lb; 1,638 mt), the commercial and recreational total allowable landings (TALs) sum to 23.861 M lb (10,823 mt). The maximum allowable transfer of landings to the commercial fishery would result in a recreational harvest limit (RHL) of 14.503 M lb (6,579 mt) and a commercial quota of 9.356 M lb (4,244 mt) before adjusting for RSA. Staff recommends that up to 3% of the TALs (0.716 M lb; 325 mt) be made available to the Research Set-Aside (RSA) Program. Staff does not recommend any changes to the current recreational bag limit of 15 fish.

Introduction

The specification of bluefish management measures is a joint process conducted annually by the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission's Bluefish Management Board (Board) with information and recommendations coming from their associated committees. The Commission's Bluefish Stock Assessment Sub-Committee (SASC) updates the bluefish assessment and conducts short term projections. The Council's Scientific and Statistical Committee (SSC) reviews assessment results and determines the acceptable biological catch (ABC) for the upcoming year. ABC is a reduction from the overfishing limit (OFL) based on the SSC's consideration of scientific uncertainty and serves as an upper limit on the catch target that management measures attempt to achieve. The Council's Bluefish Monitoring Committee (MC) develops and recommends specific coastwide (Maine – E. Coast Florida) management measures and allocations that will achieve target catch and make further adjustments to total catch as needed based on management uncertainty. Finally, the Council and Board meet jointly to develop recommendations to be submitted to the National Marine Fisheries Service. In this memorandum, information is presented to assist the SSC and MC in their roles in the specification process. Assessment update results are presented briefly, and a more detailed summary prepared by the SASC is distributed under separate cover (i.e., Attachment A).

Catch and Landings

Given the importance of the recreational component of the bluefish fishery, the history of bluefish catches begins with the implementation of data collection via MRFSS in 1981 (Figure 1). From the early 1980s to the early 1990s, recreational landings declined by factor of about 70% (avg. 1981-1983 = 89.140 M lb [40,433 mt]; avg. 1991-1993 = 25.824 M lb [11,727 mt]). Recreational landings continued to decline at a somewhat slower rate until bottoming out at 8.254 M lb (3,744 mt) in 1999. A rebuilding plan was implemented in 2000. Since then, recreational landings have grown to 14.069 M lb (6,382 mt; avg. 2009-2011). Additionally, recreational discards have increased from less than 10% of the catch in the 1980s to more than 20% of the catch in the early 2000s. Commercial landings have been relatively stable through the landings history. Commercial discards are treated as insignificant and are not estimated in the current assessment.



Figure 1. Total bluefish catch (mt) from 1981 - 2011.

Regulatory Review (Current Management Measures)

For the current 2012 fishing year, bluefish ABC (32.044 M lb; 14,535 mt) was based on $P^* = 0.384$ which was calculated using OFL₂₀₁₂ = 18,752 mt, B₂₀₁₁/B_{MSY} =0.9645, CV for OFL = 100%, and life history = "typical".

Specific sources of uncertainty in the assessment that have been noted by the SSC include:

- Missing data in the age-length keys (ALKs)
- Calibration of Albatross vs. Bigelow trawl catches
- Previously sampled near shore areas unavailable to the BIGELOW.
- Commercial discards assumed insignificant
- Significant population biomass (~40%) aggregated in the 6+ age group
- Uncertainty in the MRFSS estimates, in general

According to the FMP, ACL is set equivalent to ABC and, given the historic underharvest of landings allowances by the fishery the Monitoring Committee concluded that no deduction to accommodate management uncertainty was needed, so ABC = ACL = ACT. Specifically, the recreational ACT (83%) is 26.597 M lb and the commercial ACT (17%) is 5.448 M lb. Estimated discards for the 2012 fishery are the average observed discards for the past three years and were 4.350 M lb for the recreational fishery and zero for the commercial fishery for which discards are not estimated in the assessment and considered inconsequential. Based on the historic proportion of recreational and commercial landings for the period 1981-1989, 83% of the TAL is initially allocated as a recreational TAL and 17% is allocated as a commercial TAL. The resulting recreational TAL for 2012 is 22.247 M lb and the commercial TAL is 5.448 M lb. The FMP stipulates that if 17% of the TAL is less than 10.5 M lb (4,763 mt), then a transfer of landings could be made to increase the commercial quota to a limit of 10.5 M lb as long as the combined commercial and recreational landings would not exceed the TAL.

In the final rule that established the 2012 management measures an estimate of recreational harvest for 2012 (11,893 M lb; 5,394 mt) was reported. Accordingly, a transfer of 5.052 M lb (2,291 mt) to the commercial fishery was made resulting in an adjusted commercial quota of 10.500 M lb (4,763 mt) and an adjusted RHL of 17.776 M lb (8,059 mt). A final adjustment allowed for three research projects to utilize 491,672 lb (223 mt) of bluefish RSA quota. The final commercial quota was 10.317 M lb (4,680 mt) and the final RHL was 17.457 M lb (7,919 mt).

Biological Reference Points

Bluefish biological reference points were established in the most recent benchmark assessment (41st SARC; <u>NEFSC 2005</u>). The reference points are based on output from the ASAP model, a forward projecting statistical catch-at-age model that is used to estimate current and historic population size and fishing mortality (Legault and Restrepo 1998).

Overfishing is defined as occurring above F_{MSY} is 0.19, which was determined internally to the ASAP model. Overfishing is prevented by setting management measures based on ABC which is calculated using the Council's risk policy for a Tier 3 assessment (P* method).

The estimate of B_{MSY} is 147,051 mt (324.192 M lb), and the level at which the stock is determined to be overfished (½ B_{MSY}) is 73,525.5 mt (162.096 M lb). B_{MSY} was estimated in the 2005 assessment using

SSB and recruit estimates from ASAP, fit externally to a Beverton-Holt stock-recruit model and subsequently using Thompson-Bell Yield and SSB/R.

Stock Status and Projections

The current update uses MRIP instead of MRFSS data as recreational inputs for 2004 forward. The effect is that of minor shifts in annual catches, but no significant change in recreational estimates.

The ASAP estimate of fishing mortality for 2011 is 0.114, well below the F threshold ($F_{MSY} = 0.19$). This outcome supports the statement that for 2011 *overfishing was not occurring*. Relative to fishing mortality targets, model estimates of annual F have been below threshold levels since 1997 (see Figure 2), consistent with catches that support growth in population biomass.

Within the past 20 years, estimated population abundance peaked in 2006 at 94 million fish, but has declined since to 66 million fish in 2011 (Table 9 in Attachment A). The declines are due to model estimates of weak year classes beginning in 2009 with the 2011 year class being the lowest in the time series. Retrospective analysis of age zero estimates does not show a pronounced trend (Figure 7 in attachment A). Recreational catches of age zero fish have been lower in recent years (about 3% of the rec catch in 2009-2011) than the long term average (around 18% in 1982-2008). Whether the lower catches reflect changes in the fishery or reflect population level trends is important in responding to the assessment update, but the distinction remains unclear. These low year classes comprise the age-1, 2 and 3 bluefish in 2012 which comprise about 75% of the landings.

The time series of estimated stock biomass has increased by about 171% since 1996 (See Figure 3 below and Table 10 in attachment A). The estimate of total biomass for 2011 is 132,890 mt (292.972 M lb) which is 90.37% of B_{MSY} and 180.74% of the ½ B_{MSY} threshold. As such, *the stock is not overfished*.



Figure 2. Total bluefish abundance and fishing mortality as estimated in ASAP model. F_{MSY} is indicated by the solid horizontal line.



Figure 3. Time series of bluefish total mean biomass (000s mt) and spawning stock biomass (000s mt) relative to Bmsy target and threshold (Source: 2011 Assessment Update).



Figure 4. Age zero bluefish as a proportion of the recreational catch. Source: Assessment update data.

ABC Recommendation

(Note: A concise presentation of the calculation of OFL, ABC, TAL and other management measures is provided in Table1. A diagram of the specification process is provided in Figure 5.)

The bluefish OFL for 2012 is the total catch at F_{MSY} (0.19) which is estimated to be 38.627 M lb (17,521 mt). For 2012 the SSC calculated ABC based on the Council's P* policy. For 2013, it is assumed that the SSC will continue to apply P* for calculating ABC and so the recommended ABC is consistent with that approach. The staff recommendation, therefore, is ABC = of 27.472 M lb (12,461 mt) based on P* for a stock with typical life history, where the B₂₀₁₂/B_{MSY} (mid-year) is 0.8676, OFL = 17,521 mt, CV for OFL = 100% (Tier 3 assessment). This corresponds to P* = 0.341 and is 71.1% of the catch at OFL.

Other Management Measures

Annual Catch Limit

Under the Omnibus Amendment, an annual catch limit (ACL) is set equal to ABC. Accordingly, the recommended ACL for bluefish for 2012 is 27.472 M lb (12,461 mt).

Management Measure	LBS	MT	Basis
OFL	38,627,193	17,521	per SSC
ABC	27,471,802	12,461	P*
ACL	27,471,802	12,461	= ABC
Mgmt Uncertainty	0	0	per MC
Comm Discards	0	0	from assessment
Rec Discards	3,611,172	1,638	2009-2011 MRFSS avg.
Comm ACT	4,670,206	2,118	(ACL - Mgmt Uncert) * 17%
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Rec RSA Deduction (3%)	435,119	197	3% of RHL
Adjusted Comm Quota	9,075,976	4,117	Comm Quota - RSA
Adjusted RHL	14,068,836	6,382	RHL - RSA

Table 1. Recommended bluefish management measures for 2013.

ACT and TAL

The FMP initially prescribes 17% of the ACL to the commercial ACT and 83% to the recreational ACT (Table 1) which is based on the historic proportion of commercial and recreational landings for the period 1981-1989. Prior to this initial split, however, a reduction from ACL can be made in order to accommodate management uncertainty. The bluefish fishery has exceeded the combined (commercial + recreational) TAL once, in 2007 (Table 2) and has been below the TAL by an average of 5.2 M lb in the last five years (2007-2011; Table 2). Based on the historic performance of the bluefish fishery relative to specified management measures, no reduction from ACL is recommended such that the sum of the ACTs is equal to the ACL. A further reduction of the commercial and recreational ACTs to their respective TALs is calculated as ACT – discards for each fishery. No adjustment is made in calculating the commercial TAL since commercial discards are not currently estimated in the assessment and are assumed to be negligible. Average recreational discards for 2009-2011 (3.610 M lb; 1,638 mt) result in a recreational TAL that is 19.190 M lb (8,705 mt). The combined TAL is 23.861 M lb (10.823 mt; Table 1).

Quota Transfer and Initial RHL and Commercial Quota

The FMP further stipulates that if 17% of the combined TAL (4.056 M lb) is less than 10.5 M lb then the commercial quota could be increased to as much as 10.5 M lb as long as the recreational fishery is projected to land less than 83% of the TAL (19.804 M lb) for the upcoming year. Average recreational landings for 2009-2011 are 14.069 M lb (6,382 mt; Table 1) and this value is the basis for expected recreational landings in 2013. Because RSA will also be deducted (below), a constraint on the transfer would prevent the RSA-adjusted RHL from falling below expected recreational landings. Accordingly, a transfer of as much as 4.686 M lb (2,126 mt) to the commercial fishery could be made resulting in an initial commercial quota of 9.356 M lb (4,244 mt) and an initial RHL of 14.504 M lb (6,579 mt; Table 1). Note that this would comprise a roughly 3 M lb reduction from the 2012 RHL. The allocation of landings among the recreational and commercial fisheries is a Council-level decision and this memo only provides the maximum value for a potential transfer.

RSA deduction and Adjusted RHL and Commercial Quota

An adjustment allowing for research projects to utilize up to 3% of bluefish TAL is recommended as provided by the FMP. Full utilization of this allowance would result in a reduction of the commercial quota to 9.076 M lb (4,117 mt) and a reduction of the RHL to 14.069 M lb (6,382 mt) consistent with the expected recreational landings for 2013. The final RSA amount will likely be less than the full 3% and further adjustment to the estimated recreational landings (to include 2012 rec landings data) will occur during rulemaking.

Gear Regulations and Minimum Fish Size

A 15 fish recreational possession limit was first implemented in 2001. Prior to that a 10 fish possession limit was in place since 1990, when the FMP was first implemented. There does not appear to be a compelling reason to deviate from the existing possession limits (15 fish) for the 2013 fishing season.

Management Measures	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
TAL (M lb) *	35.328	37.841	26.866	37.293	31.85	30.853	24.797	27.762	28.156	29.356	29.264	27.293	28.267
Comm. Quota (M lb)†	9.583	9.583	10.5	10.5	10.5	10.5	8.081	8.689	7.705	9.828	10.213	9.375	10.317
Comm. Landings (M lb)	8.040	8.697	6.869	7.403	8.041	6.694	6.706	7.182	5.699	6.947	7.069	5.413	-
Rec. Target†	25.745	28.258	16.365	26.793	21.35	20.353	16.718	19.073	20.451	19.528	18.631	17.813	17.457
Rec. Landings (M lb)	10.606	13.230	11.371	13.136	17.222	19.852	16.445	21.690	19.672	14.513	16.194	11.499	-
Rec. Possession Limit	10	15	15	15	15	15	15	15	15	15	15	15	15
Total Landings	18.646	21.918	18.234	20.537	23.197	23.207	23.849	28.662	24.868	20.573	25.111	16.581	-
Overage/Underage (M lb)	-16.682	-15.923	-8.632	-16.756	-8.653	-7.646	-0.948	0.900	-3.288	-8.783	-4.153	-10.712	-
Target F	N/A	N/A	N/A	N/A	N/A	0.15	0.15	0.15	0.15	0.15	0.15	0.15	N/A
ASAP F estimate	0.13	0.15	0.13	0.14	0.15	0.15	0.14	0.16	0.12	0.1	0.14	0.11	-

 Table 2. Summary of bluefish management measures, 2000 - 2012.

* includes RSA

† adjusted downward for RSA

Atlantic Bluefish Flowchart



Figure 5. Specification process for Atlantic Bluefish as described in the Omnibus ACL/AM Amendment.

2012 Bluefish stock assessment update

Coastal Pelagic Working Group

July 9th, 2012



Proportion of Bluefish commercial landings – FL, NC, NJ, NY



Bluefish commercial landings length frequencies



Bluefish Recreational Landings and Discards (number of fish)



Year

2011 Recreational Bluefish landings and Discards by state



Bluefish recreational landings length frequencies



Bluefish discard length frequency – 2011 MRIP



Bluefish total catch at age 2010-2011



Age

Bluefish indices of abundance











Updated Weight at age (kg)



Year

Bluefish - selectivity in ASAP model



Age

ASAP model:

-Updated Catch at Age (e.g. improved age-length key including information from VA, NC, and MA., updated catch information, corrections in length data)

-Updated Weight at Age (e.g. annual values using semiannual survey length-weight equations)

-Model remains constant (e.g. same indices, fixed selectivity, parameter weighting ,etc.)



Catch residuals



Bluefish estimate of abundance and F from ASAP



Year

Bluefish biomass estimates from ASAP



Age 0 recruitment estimates for Bluefish



SSB retrospective pattern



Fishing Mortality retrospective pattern



Stock Abundance retrospective pattern



Recruitment estimate retrospective pattern



Probability distribution of 2011 bluefish F and SSB from ASAP



1000 iterations

Bluefish Projection estimates

		Quota (000s mt)	F	Jan 1 Abundance (000s)	Mean Biomass (000s mt)	SSB (000s mt)	Yield (000s mt)
F	2012	14.54		71299.60	127.58	121.21	14.54
status quo	2013		0.114	73900.40	120.18	112.27	10.84
	2014		0.114	76850.60	117.75	108.07	10.85
		Quota (000s mt)	F	Jan 1 Abundance (000s)	Mean Biomass (000s mt)	SSB (000s mt)	Yield (000s mt)
F0.1	2012	14.54		71299.60	127.58	121.21	14.54
	2013		0.16	73900.40	118.13	110.26	14.93
	2014		0.16	75124.00	111.78	102.38	14.42
		Quota (000s mt)	F	Jan 1 Abundance (000s)	Mean Biomass (000s mt)	SSB (000s mt)	Yield (000s mt)
Ftarget	2012	Quota (000s mt) 14.54	F	Jan 1 Abundance (000s) 71299.60	Mean Biomass (000s mt) 127.58	SSB (000s mt) 121.21	Yield (000s mt) 14.54
Ftarget	2012 2013	Quota (000s mt) 14.54	F 0.17	Jan 1 Abundance (000s) 71299.60 73900.40	Mean Biomass (000s mt) 127.58 117.69	SSB (000s mt) 121.21 109.82	Yield (000s mt) 14.54 15.80
Ftarget	2012 2013 2014	Quota (000s mt) 14.54	F 0.17 0.17	Jan 1 Abundance (000s) 71299.60 73900.40 74757.20	Mean Biomass (000s mt) 127.58 117.69 110.53	SSB (000s mt) 121.21 109.82 101.19	Yield (000s mt) 14.54 15.80 15.14
Ftarget	2012 2013 2014	Quota (000s mt) 14.54 Quota (000s mt)	F 0.17 0.17 F	Jan 1 Abundance (000s) 71299.60 73900.40 74757.20 Jan 1 Abundance (000s)	Mean Biomass (000s mt) 127.58 117.69 110.53 Mean Biomass (000s mt)	SSB (000s mt) 121.21 109.82 101.19 SSB (000s mt)	Yield (000s mt) 14.54 15.80 15.14 Yield (000s mt)
Ftarget Fmsy	2012 2013 2014 2012	Quota (000s mt) 14.54 Quota (000s mt) 14.54	F 0.17 0.17 F	Jan 1 Abundance (000s) 71299.60 73900.40 74757.20 Jan 1 Abundance (000s) 71299.60	Mean Biomass (000s mt) 127.58 117.69 110.53 Mean Biomass (000s mt) 127.58	SSB (000s mt) 121.21 109.82 101.19 SSB (000s mt) 121.21	Yield (000s mt) 14.54 15.80 15.14 Yield (000s mt) 14.54
Ftarget Fmsy	2012 2013 2014 2012 2012	Quota (000s mt) 14.54 Quota (000s mt) 14.54	F 0.17 0.17 F 0.19	Jan 1 Abundance (000s) 71299.60 73900.40 74757.20 Jan 1 Abundance (000s) 71299.60 73900.40	Mean Biomass (000s mt) 127.58 117.69 110.53 (100.53 Mean Biomass (000s mt) 127.58 116.82	SSB (000s mt) 121.21 109.82 101.19 SSB (000s mt) 121.21 108.96	Yield (000s mt) 14.54 15.80 15.14 Yield (000s mt) 14.54 17.52

Summary

- -Simple update of 2010 model with 2011 data
- -Not overfished
- -Overfishing not occurring
- -Model estimates show little variation or significant retro patterns
- -Fixed selectivity parameters
- -Still room for improved age information
- -Limited length samples from the recreational discards and no estimates of commercial discards contribute to the uncertainty

2012 Bluefish Fishery Performance Report

The Bluefish Advisory Panel (AP) met from 9 AM - 11:30 AM June 27, 2012 in Baltimore, MD to develop a Fishery Performance Report (FPR) for consideration during the upcoming bluefish specification cycle. At the end of its meeting, the AP reviewed and approved the summary below as the FPR.

MAFMC Bluefish Advisers in attendance were: Fred Akers (NJ recreational), Arthur Brownell (NC recreational), Greg Hurley (VA recreational), and Arnold Leo (NY commercial). Also in attendance were Dan Swanson (NH recreational) of the ASMFC Bluefish AP, James Fletcher, Marc Hoffman, and Frank Folb.

Recreational Fishery Issues

Concerns about the accuracy of MRFSS and MRIP data were voiced. There is concern that bluefish recreational effort and hence catches are significantly and systematically overestimated by a biased high estimate of overall effort. There is also great concern about the impact on recreational fisheries of inaccurate recreational catch estimates given that the FMP now includes AMs requirements (may be penalized due to overly high catch estimates). One remedy that was suggested would be to require greater individual reporting by recreational fishermen, but this is not endorsed by the entire AP. It was perceived that the final structure of the MRIP sampling program using the national registry is about the best that can be expected for management once it is finally implemented.

Market / Economic Issues

Recent increases in price of fuel reduce the amount of time and the distance fishermen can search for bluefish and have been a major constraining factor in the commercial and recreational fisheries. Poor economic conditions overall have been such that fewer people can afford to go fishing, and thus, overall participation is reduced. Fuel costs were perceived as strongly affecting bluefish recreational effort and catch in 2011. Within the recreational sector, the economic recession has resulted in reduced fishing effort across all fishing modes (headboat, charter, private, and shore). Bluefish are not highly sought after compared to fluke, striped bass, etc., and many people are focusing their limited resources on more highly valued species.

In general, the perception is that although there seem to be plenty of bluefish effort is declining due to poor economic conditions.

Environmental Issues

There was a general consensus that bluefish availability is highly variable from year to year and that this has always been the case.

If fish are moving offshore or staying offshore longer due to changes in nearshore water temperature, this would affect the availability of bluefish to recreational fishermen, but no trend is perceived. In North Carolina, bluefish are currently on the beach and there has been no change in inshore/offshore distribution of bluefish.

Changes in oceanographic conditions (wind and current patterns, water temperature) definitely affect bluefish distribution (primarily affecting availability) and there is concern that this is not currently factored in stock assessments.

The availability of forage greatly affects where bluefish will be found. An example is the limiting role of menhaden in the Chesapeake. Menhaden availability is constrained by their harvest for the vitamin industry. Demand for fish oil drives the catch of forage which then affects bluefish catch.

Accurate estimates of predation on young bluefish by spiny dogfish and striped bass needs to be better estimated and considered in stock assessments

Another environmental factor affecting the drop in bluefish commercial landings in Wanchese, North Carolina is the closure of Oregon Inlet. This probably decreased commercial fishing access/effort off NC. Although vessels have been given permission to land in VA, the low value of bluefish often does not justify the added expense of steaming to VA.

Management Issues & Management Induced Effort Shifts

Unlike many fisheries, the bluefish fishery is not characterized by management constraining landings since the recreational and commercial fisheries are consistently below harvest limits.

Fish health advisories may have negatively affected bluefish landings and increased the discard rate. This probably also contributes negatively to effort since fishing becomes more of a catch and release activity which has limited appeal.

At first glance, the 15 fish bag limit appears to be in conflict with fish advisory for personal consumption since 15 fish would be in excess of the recommended annual consumption (e.g., one meal per month for bluefish less than 24 inches and six meals per year for bluefish over 24 inches. The differential consumption recommendation may also drive effort toward smaller (<24 in) fish and increased discard rates for larger fish. If the retention of smaller fish and discard of larger fish is the norm, then assumptions about the size composition of discards in the assessment may be wrong.

General Fishing Trends

The AP was asked for their perception about the size structure of bluefish last year. Members of the AP commented that in 2011, there had been larger than normal numbers of approximately 12 inch bluefish in the Chesapeake Bay. Additionally, it was pointed out that the abundance of small fish in the surf in North Carolina was no different than usual. 9-17 inch and 14-23 inch fish in 2011 would correspond to the 2009 and 2010 year classes. This subject was brought up

because in the 2011 assessment update, the 2010 year class was estimated to be the smallest in entire time series, the 2009 year class being the second smallest.

Other Issues

There was a comment that sunset clauses need to be included in FMPs to allow for adaptation of management to changing fishery conditions. Additionally, it was suggested that any uncaught quota should not be allowed to roll into next year as a conservation measure.

Bluefish AP Information Document - June 2012

Management System

The Bluefish Fishery Management Plan (FMP) was implemented in 1990 establishing the Mid-Atlantic Fishery Management Council's (Council) management authority over the fishery in federal waters. Amendment 1, implemented in 2000, addressed stock rebuilding and created the Bluefish Monitoring Committee (MC) which meets annually make management measure recommendations to the Council. Amendment 3 (effective 1/1/2012) incorporated the development of annual catch limits (ACLs) and accountability measures (AMs) into the specification process. Specifying bluefish management measures is a joint process conducted by the Council and the Atlantic States Marine Fisheries Commission's Bluefish Management Board (Board). The Council's Scientific and Statistical Committee (SSC) reviews assessment results, and the Advisory Panel's fishery performance report, and determines the acceptable biological catch (ABC) for the upcoming year. The Council's Bluefish Monitoring Committee develops and recommends specific coastwide management measures (commercial quota, recreational harvest limit) that will achieve the catch target and makes further adjustments to total catch as needed based on management uncertainty. Finally, the Council and Board meet jointly to develop recommendations to be submitted to the National Marine Fisheries Service. Table 1 below illustrates how the management measures for 2012 were calculated based on the Council's recommendations.

Management Measure	Value (lbs)	Basis	
OFL	40,944,251	per SSC	
ABC	32,044,190	per SSC	
ACL	32,044,190	= ABC	
Mgmt Uncertainty	0	per MC	
Comm Discards	0	from assessment	
Rec Discards	3,777,618	2008-2010 MRFSS avg.	
Comm ACT	5,447,512	(ACL - Mgmt Uncert) * 17%	
Rec ACT	26,596,678	(ACL - Mgmt Uncert) * 83%	
Comm TAL	5,447,512	Comm ACT - Disc	
Rec TAL	22,819,060	Rec ACT - Disc	
TAL (combined)	28,266,572	Comm + Rec TAL	
Transfer	5,052,488	By definition	
pre-RSA Comm Quota	10,500,000	Comm TAL + transfer	
pre-RSA RHL	17,766,572	Rec TAL - transfer	
Comm RSA Deduction (3%)	RSA Deduction (3%) 315,000 3% of Comm Quot		
Rec RSA Deduction (3%)	Rec RSA Deduction (3%) 532,997 3% of RH		
Final Comm Quota	10,185,000	Comm Quota - RSA	
Final RHL	17,233,575	RHL - RSA	

Table 1. Recommended bluefish management measures for 2012.

Bluefish Biology

The bluefish, *Pomatomus saltatrix*, is distributed worldwide, but in the western North Atlantic ranges from Nova Scotia and Bermuda to Argentina. Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the Middle Atlantic Bight (MAB) during spring and south or farther offshore during fall. Within the MAB they occur in large bays and estuaries as well as across the entire continental shelf. Juvenile stages have been recorded in all estuaries within the MAB, but eggs and larvae occur in oceanic waters (Able and Fahay 1998). Growth rates are fast and they may reach a length of 3.5 ft and a weight of 27 lbs (Bigelow and Schroeder 1953). Bluefish live to age 12 and greater (Salerno et al. 2001).

Bluefish eat a wide variety of prey items. The species has been described by Bigelow and Schroeder (1953) as "perhaps the most ferocious and bloodthirsty fish in the sea, leaving in its wake a trail of dead and mangled mackerel, menhaden, herring, alewives, and other species on which it preys."

Bluefish born in a given year (young of the year) typically fall into two distinct size classes suggesting that there are two spawning events along the east coast. More recent studies suggest that spawning is a single, continuous event, but that young are lost from the middle portion resulting in the appearance of a split season. As a result of the bimodal size structure of juveniles, young are referred to as the spring-spawned cohort or summer-spawned cohort. In the MAB, the spring cohort appears to be the primary source of fish that recruit into the adult population.

Status of the Stock

Bluefish stock status and biological reference points are based on output from the ASAP model, a forward projecting statistical catch-at-age model that was accepted by SAW/SARC reviewers in 2005. Overfishing is defined as occurring when fishing mortality (F) is above F_{MSY} (0.19). Target stock size, in weight, is defined as B_{MSY} , currently estimated to be 324 M lb, and the level at which the stock is determined to be overfished (½ B_{MSY}) is 162 M lb.

A stock assessment update is still pending for the 2011 fishing year. The ASAP estimate of fishing mortality for 2010 is 0.14, well below the F threshold ($F_{MSY} = 0.19$). This supports the statement that for 2010 overfishing was not occurring. Relative to fishing mortality targets, model estimates of annual F have been below threshold levels since 1997 (Figure 1), consistent with catches that support growth in population biomass.

Within the past 20 years, bluefish abundance peaked at 100 million fish (in 2008), declined slightly in 2009 to 86 million fish and further to 72 million fish in 2010. The declines are due to apparent weak 2009 and 2010 year classes, the two lowest in the time series. Retrospective analysis indicates no trend in updates to terminal year age-0 abundance estimates. These two year classes comprise age-1 and 2 bluefish in 2011 and will be age-2 and 3 bluefish in 2012. Selectivity on age 1 and 2 bluefish is 100% and 94%, respectively, and 48% on age 3 bluefish.

The time series of estimated stock biomass has increased by about 176% since 1996 (Figure 2). The final estimate of total biomass for 2010 is 140,297 mt (309.302 M lb) which is 95.4% of B_{MSY} and 190.8% of the ½ B_{MSY} threshold. Therefore, the stock is not overfished.



Figure 1. Total bluefish abundance and fishing mortality as estimated in ASAP model. F_{MSY} is indicated by the solid horizontal line. (Source: 2011 Assessment Update)



Figure 2. Time series of bluefish total mean biomass (000s mt) and spawning stock biomass (000s mt) relative to Bmsy target and threshold. (Source: 2011 Assessment Update)

Fishery Performance

The performance of the fishery relative to specified management measures is provided in Table 2. Except for 2007, the bluefish fishery has never exceeded the Council-recommended harvest limits. In 2007, the recreational fishery exceeded the recreational harvest limit by about 2 million lbs. In 2011, both the commercial and recreational fisheries greatly under-harvested bluefish. The recreational fishery landed 11.499 M lb compared to the 17.813 M lb RHL, and the commercial fishery landed 5.082 M lb compared to a quota of 9.375 M lb. Additionally, the commercial fishery is on track to underperform in 2012 compared to 2011 (Figure 3).

Management Measures	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
TAL (M lb)*	35.328	37.841	26.866	37.293	31.85	30.853	24.797	27.762	28.156	29.356	29.264	27.293
Comm. Quota (M lb)†	9.583	9.583	10.500	10.500	10.500	10.500	8.081	8.689	7.705	9.828	10.213	9.375
Comm. Landings (M lb)	8.041	8.688	6.863	7.401	7.994	7.045	6.955	7.499	5.968	6.990	7.069	5.082
Rec. Target†	25.745	28.258	16.365	26.793	21.35	20.353	16.718	19.073	20.451	19.528	18.631	17.813
Rec. Landings (M lb)	10.606	13.23	11.371	13.136	15.203	16.162	16.894	21.163	18.900	13.583	18.042	11.499
Rec. Possession Limit	10	15	15	15	15	15	15	15	15	15	15	15
Total Landings	18.647	21.918	18.234	20.537	23.197	23.207	23.849	28.662	24.868	20.573	25.111	16.581
Overage/Underage (M lb)	-16.681	-15.923	-8.632	-16.756	-8.653	-7.646	-0.948	+0.900	-3.288	-8.826	-4.153	-10.712
Target F	N/A	N/A	N/A	N/A	N/A	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ASAP F estimate	0.13	0.15	0.13	0.14	0.15	0.15	0.14	0.16	0.12	0.10	0.14	-

Table 2. Summary of bluefish management measures, 2000 - 2011.

* Includes RSA

† RSA deducted

Figure 3. Comparison of 2011(top) and 2012 (bottom) commercial landings from the NMFS quota monitoring website: <u>http://www.nero.noaa.gov/ro/fso/reports/reports frame.htm</u>



Landings History

Given the importance of the recreational component of the bluefish fishery, the history of bluefish catches begins with the implementation of data collection via MRFSS in 1981 (Figure 4). From the early 1980s to the early 1990s, recreational landings declined by factor of about 70% (avg. 1981-1983 = 89.140 M lb; avg. 1991-1993 = 25.824 M lb). Recreational landings

continued to decline at a somewhat slower rate until reaching their lowest level at 8.254 M lb in 1999. A rebuilding plan was implemented in 2000. Since then, population size has increased and recreational landings have grown to 16.841 M lb (avg. 2008-2010). Additionally, recreational discards have increased from less than 10% of the catch in the 1980s to more than 20% of the catch in the early 2000s. Commercial landings have been relatively stable throughout the landings history. Commercial discards are treated as insignificant and are not estimated in the current assessment.



Figure 4. Time series of bluefish recreational and commercial landings and discards (Source: 2011 Assessment Update).

Recreational Fishery

Trends in directed fishing for bluefish from 1991 to 2010 are provided in Table 3. The lowest annual estimate of directed trips was 1.3 million in 1999 and the highest annual estimate of directed trips was 5.8 million trips in 1991. In 2010, anglers targeted bluefish in 1.7 million trips. Relative to total angler effort in 2010, bluefish were the primary target of recreational trips only about 4% of the time (Table 4).

 Table 31. Number of bluefish recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2012.

Year	Number of Fishing Trips ^a	Recreational Harvest Limit ('000 lb)	Recreational Landings ('000 lb) ^b	
1991	5,811,446	None	32,997	
1992	4,261,811	None	24,275	
1993	3,999,487	None	20,292	
1994	3,414,337	None	15,541	
1995	3,409,966	None	14,307	
1996	2,523,984	None	11,746	
1997	2,021,713	None	14,302	
1998	1,838,525	None	12,334	
1999	1,316,939	None	8,253	
2000	1,526,554	25,745	10,606	
2001	2,156,043	28,258	13,230	
2002	1,893,640	16,365	11,371	
2003	2,100,057	26,691	13,136	
2004	2,178,373	21,150	15,828	
2005	2,511,295	20,157	18,132	
2006	2,050,409	16,473	16,752	
2007	2,636,900	18,823	21,181	
2008	2,210,230	20,414	18,900	
2009	1,532,445	19,528	13,583	
2010	1,745,312	18,631	16,166	
2011	NA	17,813	11,499	
2012	_	17.234	-	

^aEstimated number of recreational fishing trips (expanded) where the primary species targeted was bluefish, Maine – Florida's East Coast. Source: Scott Steinback, NMFS/NEFSC, ^bAtlantic coast from Maine through Florida's east coast, NA = Data not available.

Table 4.	Angler ef	fort (number	of trips)	that targe	eted bluefish	in 2010. I	Maine throug	ph Florida.
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Mode	Total Angler Effort	Angler Effort Targeting Bluefish ^a	Percent Angler Effort Targeting Bluefish		
Party/Charter	1,634,404	58,457	3.58%		
Private/Rental	23,091,530	624,894	2.71%		
Shore	19,231,201	1,061,961	5.52%		
Total	43,957,135	1,745,312	3.97%		

^aTotal effort targeting bluefish as primary species.

Source: Scott Steinback NMFS/NEFSC.

Landings by State

Recreational catch and landings by state for 2011 are provided in Table 5. The greatest overall catches (includes discards) were in North Carolina and New Jersey, both with a little over 3 million fish. The greatest harvest (retained catch) of bluefish occurred in New York with 3.1 million pounds. The lowest catches occurred in New Hampshire and Maine. Average weights, based on dividing landings weight by number for each state, suggest that bluefish size tends to increase toward the north along the east coast.

	Harvest			Catch
State	Pounds of Fish	Number of Fish	Average wt of fish (lbs)	Number of Fish
ME	3,407	481	7.1	8,084
NH	18,393	2,118	8.7	3,478
MA	1,175,610	224,501	5.2	822,274
RI	520,783	124,143	4.2	451,992
СТ	1,752,582	306,858	5.7	1,303,595
NY	3,112,771	927,493	3.4	2,525,590
NJ	2,622,125	1,149,558	2.3	3,060,364
DE	57,417	45,786	1.3	173,305
MD	312,884	259,286	1.2	667,609
VA	53,728	85,092	0.6	282,368
NC	993,543	1,152,105	0.9	3,075,872
SC	159,975	225,058	0.7	776,082
GA	1,661	2,742	0.6	72,657
FL (East Coast)	714,366	556,172	1.3	1,468,378
Total	11,499,245	5,061,393	2.3	14,691,648

Table 5.	MRIP	estimates	of 2011	recreational	harvest and	l total	catch for	bluefish.

Table 6 reflects MRFSS/MRIP-based estimates of catch and landings by mode (1999 through 2010) and indicates that the primary catch modes for bluefish are private or rental boats (52.05%) and shore-based fishing (41.23%). Only 6.72 % of the catch came from party/charter boats for the same time period. In terms of landings, private and rental boats are still the most important mode (56.45%); however shore-based fishing drops to 23.28% and party/charter boats increase to 20.27%. Retention of bluefish, therefore, varies by mode and possibly the expense associated with a given mode.

 Table 6. The percentage (%) of bluefish caught and landed by recreational fishermen for each mode, Maine through Florida, 1999-2010.

Mode	Catch (Number A+B1+B2)	Landings (Weight A+B1)
Private/Rental	52.05%	56.45%
Shore	41.23%	23.28%
Party/Charter	6.72%	20.27%
Total	100.0%	100.0%

Federally Permitted Vessels

Federal permit data indicate that a total of 971 recreational (party/charter) bluefish permits were issued in 2010. Among these, 502 vessels had both commercial and party/charter bluefish permits. According to VTR data, 443 party/charter vessels reported catching bluefish from Maine through North Carolina with 437 of these vessels retaining bluefish.

Recreational Catches by Area

MRIP classifies catch into three area distinctions, inland, nearshore ocean (< 3 mi), and offshore ocean (> 3 mi). About 54% of the catch of bluefish on a coastwide basis came from inland waters, followed by nearshore ocean (39%) (Figure 4). Offshore ocean is only about 7% of the total catch.



Figure 4. Bluefish recreational catch by area (1990-2011).

Commercial Fishery

Vessel and Dealer Activity

Federal permit data indicate that 2,765 commercial bluefish permits were issued in 2011 (Table 7). A subset of federally-permitted vessels was active in 2010 with dealer reports identifying 588 vessels with commercial bluefish permits that actually landed bluefish.

Of the 658 federally permitted bluefish dealers, there were 172 dealers who actually bought bluefish in 2011 (Table 7).

STATE	PERM VESSELS	ACTIVE VESSELS	PERM DEALERS	ACTIVE DEALERS
MA	1064	147	178	48
NY	287	131	128	42
NJ	379	92	103	9
RI	187	84	63	28
NC	155	69	34	22
VA	124	21	35	12
СТ	47	13	7	< 3
MD	36	12	21	< 3
NH	118	9	14	< 3
ME	271	3	31	< 3
PA	16	3	7	0
DE	14	3	11	0
OTHER	67	1	21	6
TOTAL	2765	588	658	172

Table 7. Permitted and active bluefish vessels and dealers by state for 2011.

Note: States with less than 3 dealers reporting are not reported for confidentiality issues. Source: NMFS Permit Database and Dealer Weighout Data.

Effort/Landings by Gear

NMFS VTR data indicate that a total of 1,383 commercial trips targeted bluefish (bluefish \geq 50 % of total catch) in 2011 (Table 8). Landings from directed trips (1.600 M lb) are approximately 31.5 % of coastwide commercial bluefish landings for 2011 (7.290 M lb). Gillnets accounted for 93 % of the directed catch while hook gear accounted for 5 %.

Commercial Gear Type	Trips	Landings (lbs)	Pct Total
GILL NET	818	1,494,252	93%
HOOK AND LINE	545	72,404	5%
OTHER	20	33,319	2%
TOTAL	1,383	1,599,975	100%

Table 8. Commercial gear types associated with bluefish harvest in 2011.

Effort/Landings by Area

The Northeast Region is divided into 46 statistical areas for Federal fisheries management. According to VTR data, bluefish were commercially harvest in 40 statistical areas in 2011 (Figure 5). Seven statistical areas, however, collectively accounted for 75.1 % of VTR-reported landings in 2011, with individual areas contributing 7% to 14% of the total. These areas also represented 69.6% of the trips that landed bluefish suggesting that resource availability as expressed by catch per trip is fairly consistent through the range where harvest occurs.



Figure 5. NMFS Statistical Areas. Shading reflects the cumulative percentage of landings with red and orange being the primary areas where the commercial landings are taken.

The top commercial landings ports for bluefish are shown in Table 9. Twelve ports qualified as "top bluefish ports", i.e., those ports where 100,000 pounds or more of bluefish were landed. Wanchese, NC was the most important commercial bluefish port with over 2.170 M lb landed.

Table 9. Top ports of bluefish landings (in pounds), based on NMFS 2010 dealer data. Since this table
includes only the "top ports" (ports where landings of bluefish were > 100,000 lb), it does not include all of the
landings for the year.

Port ^a	Pounds	# Vessels	
WANCHESE, NC	2,170,087	36	
BARNEGAT LIGHT/LONG BEACH, NJ	830,001	26	
ENGELHARD, NC	374,970	16	
HATTERAS, NC	364,811	17	
POINT PLEASANT, NJ	269,779	39	
BELFORD, NJ	254,567	17	
POINT JUDITH, RI	250,852	102	
СНАТНАМ, МА	188,850	48	
MONTAUK, NY	181,513	92	
GREENPORT, NY	173,843	4	
HAMPTON BAYS, NY	146,934	32	
PROVINCETOWN, MA	129,354	12	

^aPorts with less than 3 vessels not reported for confidentiality issues. Source: Dealer Weighout Data, as of November 11, 2011.

Revenue

In 2010, commercial vessels landed about 7.290 M lb of bluefish valued at approximately \$3.14 million. Average coastwide ex-vessel price of bluefish was \$0.43/lb in 2010, a 10 % increase from the previous year (2009 price = \$0.39/lb). The relative value of bluefish is very low among commercially landed species, approximately 0.30 % and 0.18 % of the total weight and value, respectively of all finfish and shellfish landed along the U.S. Atlantic coast in 2010. For states where bluefish were commercially landed, the contribution of bluefish to the total value of all finfish and shellfish varied by state in 2010 (Table 10). Bluefish ranged from less than 0.01 % of total commercial value in Maine to 4.47 % in North Carolina. Relative to total landings value, bluefish were most important in New York and North Carolina, contributing the largest percentage of ex-vessel value of all commercial landings in those states. This contribution did not change considerably from the previous complete fishing year (i.e., 2009).



Figure 5. Landings, ex-vessel value, and price for bluefish, 2000-2011. Source: NMFS unpublished dealer data. Prices are unadjusted.

 Table 10. Percent contribution of bluefish to the commercial landings and value of all species combined from

 Maine through East Coast of Florida, 2010.

State	Pounds of Bluefish as a Percentage of all Species	Value of Bluefish as a Percentage of all Species
ME	< 0.00%	< 0.00%
NH	0.03%	0.01%
MA	0.09%	0.08%
RI	0.29%	0.24%
СТ	0.15%	0.07%
NY	1.50%	1.26%
NJ	0.29%	0.33%
DE	0.31%	0.13%
MD	0.08%	0.05%
VA	0.08%	0.11%
NC	4.47%	1.41%
SC	0.00%	0.00%
GA	0.00%	0.00%
FL (East Coast)	1.09%	0.24%
Total	0.30%	0.18%

Source: Commercial Fisheries Database, as of November 9, 2011; and South Atlantic General Canvass Data as of June 13, 2011.

Bycatch

The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines. This fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, spiny dogfish, and other species. Among these species, weakfish are considered to be depleted; however, natural mortality rather than fishing mortality is implicated as constraining stock size. Atlantic croaker and spiny dogfish are not overfished, nor is overfishing occurring. Bonito are unregulated and stock status is unknown. Given the mixed-species nature of the bluefish fishery, incidental catch of non-target species is not directly attributable to the bluefish fishery.

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