MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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M E M O R A N D U M

DATE: June 1, 2012

TO: Council

FROM: Jason Didden

SUBJECT: 2013 Mackerel, Squid, Butterfish (MSB) Specifications

The MSB Committee will meet as a committee of the whole on Tuesday June 12, 2012, 1pm-3pm to adopt 2013 MSB specification recommendations to the National Marine Fisheries Service (NMFS). Please find attached the following core briefing documents:

(page numbers refer to the larger underlined **page numbers in bottom-center)**

There are additional relevant background materials available on the Council website, particularly the May 2012 Scientific and Statistical Committee (SSC) meeting document site: www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm.
Among a variety of background documents, the fishery information documents at that site provide assessment, trawl index, and recent fishery performance information. There is also a memo from staff to the SSC on ABC options, a report on the operation of the butterfish cap in 2011, and detailed assessment information.

Note: The discussions below generally assume that the Council will adopt the SSC's ABC recommendation as the Council's ABC recommendations (the Council can go lower but not higher). If the Council sets a lower ABC or lower annual catch target (ACT) related to OY or other considerations, then additional analysis will have to be conducted at the Council meeting.

Monitoring Committee Summary & Staff Recommendations

Illex Squid: Continue multi-year specifications (2013 will be year 2 of 3). No necessary changes are apparent - the SSC reaffirmed the ABC set last year.

Longfin Squid: Mostly continue with multi-year specifications (2013 will be year 2 of 3). No necessary changes are apparent for the quotas - the SSC reaffirmed the ABC set last year (the butterfish cap is dealt with in the butterfish section below). Several regulatory changes were suggested by NMFS regional office staff that could improve management efficiency, which Council staff supports.

1. Change the longfin squid trip notification from 72 to 48 hours. Fishermen who fish shorter trips find the 72 hour requirement burdensome and the observer program reports they can handle 48 hours. 48 hours will still be burdensome for some fishermen but some have reported 48 hours would be less burdensome. No biological impacts would be expected.

2. Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90%. Since there are just a few weeks left in the trimester at that point, an overage would still not be expected with a 10% buffer and since overages roll over, a small trimester overage should have no biological impacts. Given the lack of biological impacts, avoiding unnecessary 1-2 week closures at the end of a trimester reduces management uncertainty and avoids unnecessary negative economic impacts.

3. Effective April 15 of each year, update the 90% closure threshold for longfin squid to 95%. Since there are just a few weeks left in the trimester at that point, an overage would not be expected with a 5% buffer and since overages roll over, a small trimester overage should have no biological impacts. Given the lack of biological impacts, avoiding unnecessary 1-2 week closures at the end of a trimester reduces management uncertainty and avoids unnecessary negative economic impacts.

4. Effective August 15 of each year, update the 90% closure threshold for longfin squid to 95%. Since there are just a few weeks left in the trimester at that point, an overage would not be expected with a 5% buffer and since overages roll over, a small trimester overage should have no biological impacts. Given the lack of biological impacts, avoiding unnecessary 1-2 week closures at the end of a trimester reduces management uncertainty and avoids unnecessary negative economic impacts.

Atlantic Mackerel: The SSC reaffirmed the 80,000 mt ABC. Like the monitoring committee, the SSC remains concerned about the true status of mackerel, but found no cause sufficient to deviate from the TRAC assessment recommendations. One viable option would be to maintain the 2012 specifications.

Alternative 1b for Mackerel		
(a)	Overfishing Limit (OFL) (metric tons - mt)	Unknown
(b)	Acceptable Biological Catch (ABC) (mt)	80,000
(c)	Expected Canadian Catch (mt)	36,219
(d)	U.S ABC (mt)	43,781
(e)	Annnual Catch Limit (ACL) (Equals ABC)	43,781
(f)	Recreational Allocation (6.2%)	2,714
(g)	Commercial Allocation (93.8%)	41,067
(h)	Recreational Annual Catch Target (ACT) Buffer	10%
(i)	Recreational ACT = Recreational Harvest Limit (RHL) (mt)	2,443
(j)	Commercial ACT Buffer	15%
(k)	Commercial ACT (mt)	34,907
(l)	Commercial Discard Set-Aside	3.11%
(m)	Domestic Annual Harvest (DAH) (mt)	33,821
(n)	Domestic Annual Processing (DAP) (mt)	33,821
(o)	Joint Venture Processing (JVP)	0
(p)	Total Allowable Level Foreign Fishing (TALFF)	0

Canadian catch was much lower in 2011 than 2010 (about 12,000 mt versus 36,219mt). A justification could therefore be made to use a lower amount for expected Canadian catch in 2013. However, a likely pessimistic Canadian assessment is due soon that may also call into question whether U.S. and Canadian mackerel should be treated as a single stock. Also, it is legally unclear if the U.S. ABC can be increased without the SSC certifying that such an increase would not be expected to lead to overfishing, which would seem unlikely given their May 2012 report (see below). Unlike most MAFMC stocks, there is an overall ABC (which did not increase) and a U.S. ABC as well, and it is not clear to which (or both) the risk policy of not increasing catches in the face of high uncertainty applies. Given the variability in Canadian catches, such an increase would mean a higher risk of exceeding the overall ABC (although paybacks are only required if the U.S. ABC, i.e. the ACL, is exceeded). Also, fully de-coupling the US and Canadian catches would require a framework or amendment (a request for additional analysis on this topic may be warranted first however).

Staff notes that given the Council has stated a preference for additional precaution in highly uncertain scenarios, increasing U.S. catch at the current time appears unwarranted. Since information on discards has not changed, if the U.S. ABC is not changed, the same specifications as last year could be maintained (see table above). Also, the SSC did specify its ABC for 3 years (2013-2015) and the Council could do the same subject to annual review (like the SSC), which could reduce staff workload if the Council decided to recommend the status quo next year.

Atlantic Buterfish: The SSC increased the butterfish ABC from 3,622mt to 8,400mt with a 16,800 mt OFL proxy (i.e. a 50% buffer was used to address scientific uncertainty). The current ABC in 2012 is 1,811mt but that is expected to increase to 3,622mt later in 2012 if Framework 6 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan is implemented (a Proposed Rule is pending). An increase to 8,400mt presents the Council with a variety of options in terms of quotas and trip limits, as discussed below. Many of the options are policy-oriented in nature and some have allocation implications, precluding definitive recommendations from the monitoring committee and/or staff in many areas (such issues are not in the purview of the monitoring committee and/or staff).

Butterfish Quotas - Several factors may influence Council decision making:

- If 2013 catch (landings plus discards) exceeds 8,400mt, the amount of the overage will be deducted from 2014 catch.
- Discards will count against the ABC but are estimated and subject to variations in absolute quantity as well as variations in precision.
- If a 2013 overage is severe, butterfish and longfin squid fisheries in future years could be compromised related to pay-back deductions.
- Past years with catches near 8,400mt (± 2000mt and reasonable precision on discards) (1989, 1992, 1994, 1995, 2000, 2001) landed about 1/3 of catch and discarded about 2/3 of catch.
- A higher ABC and higher trip limits may convert discards to landings. Conversely, a higher ABC and trip limits could have the effect of reducing the incentive to avoid butterfish, leading to higher catch, including discards.
- Depending on the level of the butterfish cap on the longfin squid fishery, the cap can limit discards in a manner that did not exist in past years like 1989, 1992, 1994, etc.
- The more butterfish that is reserved for the butterfish cap, the less likely the butterfish cap is to restrict the longfin squid fishery (but this probably means lower butterfish landings).
- In 2012, about 5,000 mt of butterfish would appear to be needed if the longfin squid fishery were to have the chance to catch its full quota due to the relatively high incidental catch of butterfish in 2012. However, longfin squid landings have been relatively low which may have contributed to the high incidental catch of butterfish (i.e. in a year with higher longfin squid landings, the incidental catch might be lower).
- There is a tradeoff between butterfish landings and longfin squid landings because of the cap. Each pound of butterfish cap can allow potentially 4-20 pounds of longfin squid landings

(depending on the bycatch ratio), and in 2011 one pound of longfin squid was worth about 50% more than one pound of butterfish. There are also about 100 vessels active in the longfin squid fishery with many of them strongly dependent on longfin squid catch.

- As more butterfish are assigned to the cap, less butterfish are probably available for landings and vice versa, if the Council wants to maintain a low overall likelihood of exceeding the ABC.
- There is high uncertainty in general about how things will work out given there are a lot of moving pieces and given there has not been a directed butterfish fishery since 2001. Adjusting the ACT buffer from 10% to a higher amount will reduce the probability of overages but also reduce butterfish available for landings and/or the butterfish cap.
- Having a 3" mesh in a directed butterfish fishery should limit discards to some degree (catches of very small unmarketable butterfish should be reduced) but some additional discarding could occur related to directed butterfish fishing.
- Assigning a higher cap for longfin may or may not mean higher discards in that fishery…it is not clear how that fishery might operate with higher butterfish trip limits.
- The 2011 cap of 1,436 mt on the longfin squid fishery was not constraining as butterfish catch and longfin squid landings were moderate. Preliminary 2012 data suggest that butterfish catch rates have been higher in 2012. The current cap is 1,436 mt but that will increase to 2,445 mt later in 2012 if Framework 6 is implemented (adjusts the Council's risk policy to allow ABC increases for Tier 4 assessment stocks without overfishing limits (OFLs) or OLF proxies, as long as the SSC expects such increases will not lead to overfishing, which the SSC has affirmed).

Given all of these considerations, the options in the following table (next page) probably have a good chance of not exceeding the ABC, but again there is a lot of management uncertainty. These options essentially differ in the tradeoff between butterfish set aside for discards (and the longfin-butterfish cap) versus butterfish for landings. A lower cap will probably control discards and allow for higher landings but also means more possible impacts on the longfin squid fishery. Potential substantial discarding of butterfish in a directed butterfish fishery is a possibility but should be minimized by use of a 3" mesh, as proposed below.

Specifications and Assumptions	Calculation	Option A - Higher Longfin/ Butterfish Cap; More Discard Set Aside; Less Landings	Option B - Medium Longfin/ Butterfish Cap; Medium Discard Set Aside; Medium Landings	Option C - Lower Longfin/ Butterfish Cap; Less Discard Set Aside; More Landings
ABC	A: (From SSC)	8,400	8,400	8,400
ACT	B: (90% of A - Last Year's ACT buffer)	7,560	7,560	7,560
% set aside for discards	C (Lower if cap is lower)	66%	50%	33%
Discards MT	D: (B*C)	4,990	3,780	2,495
Landings %	E (100%-Discard %)	34%	50%	67%
Landings MT	F: (E*B)	2,570	3,780	5,065
Butterfish Cap %	G: (H/B)	60%	40%	20%
Butterfish Cap MT	H (higher = less possible impact on longfin squid)	4,500	3,000	1,500
Cap Discards (based on observed 2011 ratio)	I: (H*87%)	3915	2610	1305
Non Cap Discards (was about 700 in 2011 but may be highly variable)	J: (700+500) Add 500 to avoid overage	1200	1200	1200
Total Discards (Cap+Non Cap)	K: (I+J)	5115	3810	2505
Total Catch (Landings+Discards) (Should be close to ACT)	L: (K+F)	7,685	7,590	7,570

The SSC reviewed the 2011 cap operation and found that it appeared to be working as primarily intended (controlling butterfish mortality in the longfin squid fishery), but that non-cap discards (other small mesh fisheries) need to be better accounted for in order to avoid overall ABC overages. Assigning 1200mt for non-cap discards (J above) is a potential response to this finding. A full report on the cap is available at: http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm. Total butterfish catch in 2011 was 2099 mt, a 288 mt or 16% overage. The cap did not constrain the longfin squid fishery in 2011 with a cap of 1,436 mt as the longfin squid fishery stayed below its cap. Rather, a landings overage (discussed further below) and non-cap discards both contributed to the ABC overage. No paybacks are required for 2011 performance but paybacks are required from 2012 forward.

There was some Monitoring Committee discussion about removing the cap altogether, but without controls on discards in the longfin squid fishery, a very high discard set aside may be warranted, precluding substantial increases in landings. There was also some discussion of whether, if the cap analysis later in the year (e.g. late November) suggested that the amount apportioned for discards was too high (the cap was substantially below its specification), if there could be an in-season adjustment to increase the landings quota. Staff will investigate this possibility with NERO further prior to the Council meeting.

Pre-Closure (directed) Butterfish Trip Limits for Moratorium Vessels - Several factors may influence Council decision making:

- Current limits are 5,000 pounds for ≥ 3" mesh and 1,000 pounds for < 3" mesh.
- The primary likely butterfish producer/exporter (Seafreeze) reports that to enter the Japanese market, they need to harvest butterfish very efficiently, i.e. not have trip limits that increase costs. Also, the quality of butterfish is highest December-March so that is when Seafreeze would attempt to land butterfish (probably 1500 mt – 3000 mt) to try and re-establish an export market in year 1 of a directed fishery.
- Staff has received communication from several industry participants that a directed butterfish fishery can be conducted with 3" mesh.
- Under Option A above, if trips are being landed in the 300,000-500,000 pound range (as has happened in the past, especially 2001), the directed fishery could close after several weeks to a couple of months. Then restrictive trip limits (~500 pounds/trip) would be required for the remainder of the year.
- Lower trip limits could spread out the quota for a greater part of the year. In other words, the trip limits potentially have allocation implications.
- Increasing the limits for participants using mesh <3 inches would also seem appropriate given the higher ABC, and an increase from 1,000 pounds to 2,500 pounds was proposed. This would hopefully allow more butterfish caught in all small mesh fisheries to be retained rather than discarded. For example, the average observed butterfish cap trip in 2011 caught about 2,100 pounds of butterfish, which was mostly discarded.

Staff Note: While not discussed on the call, another option is to have an additional trigger before the fishery is totally closed. Under such an option, there could be no trip limit or a relatively high trip limit (e.g. 200,000-300,000 pounds) until X% of the landings quota is reached (might vary depending on what total landings quota was selected), followed by a lower (e.g. 20,000-50,000 pound) trip limit until the full closure is reached (the full closure scenarios are discussed below). This could prevent an early closure from leading to restrictive trip limits (~500 pounds/trip) for a large portion of the year, which would cause regulatory discarding. Staff will conduct additional analysis on this subject in cooperation with NMFS staff before the Council meeting.

Post-Closure (directed) Butterfish Trip Limits for Moratorium Vessels - Several factors may influence Council decision making:

- In 2011, the butterfish fishery closed on July 6 when about 80% of the landings quota was expected to be achieved, and went to a 250 pound trip limit for all permits (moratorium and incidental). Landings after that point averaged 11.2 mt per week, leading to a 33% landings quota overage, primarily because there was such a long post-closure time period.
- Given the higher ABC, a higher post-closure trip limit may be warranted to help minimize regulatory discarding. A 500 pound post-closure limit is proposed.
- A higher post-closure trip limit would probably mean higher post-closure weekly landings (assuming similar butterfish availability), but how much is uncertain.
- Assuming a 75% increase in post-closure weekly landings (to 19.6 mt per week) from a 100% increase in the post-closure trip limit is probably reasonable/conservative. Not all trips will move up to 500 pounds, though there may also be some additional trips.
- The Council could also add a provision whereby NERO could adjust the initial 500 pound post-closure trip limit if it looks like post-closure landings are proceeding much faster or slower than provided for in the table below given the inherent uncertainty involved in such predictions.
- If 19.6 mt is needed for each week of a closure, the following closure threshold schedule below may be constructed for various landings quotas (from Options A, B, C above). The basic concept is that the earlier the fishery closes, the more quota is needed in reserve to avoid a landings quota overage.

Weeks Left In Year	MT needed (19.6 mt/ week)	Closure Theshold 2,570 mt Quota (2% for mis/late reporting)	Closure Theshold 3,780 mt Quota (2% for mis/late reporting)	Closure Theshold 5,065 mt Quota (2% for mis/late reporting)	Each month there wuold be a new closure threshold…the later in the year the less is needed for post-clsoure landings
0	0	98%	98%	98%	Jan 1 2013
4	78.4	95%	96%	96%	1-Dec
9	176.4	91%	93%	95%	1-Nov
13	254.8	88%	91%	93%	1-Oct
17	333.2	85%	89%	91%	1-Sep
22	431.2	81%	87%	89%	1-Aug
26	509.6	78%	85%	88%	1-Jul
31	607.6	74%	82%	86%	1-Jun
35	686	71%	80%	84%	1-May
39	764.4	68%	78%	83%	1-Apr
44	862.4	65%	75%	81%	1-Mar
48	940.8	62%	73%	79%	1-Feb
52	1019.2	58%	71%	78%	1-Jan

Note: NERO is investigating internally how burdensome changing the closure threshold on a month to month basis would be (it would involve some minor computer code adjustments each month). The general principle in favor of such a system is that both the possibility of substantial quota overages or substantial quota underages should be minimized, especially if NMFS can make additional in-season adjustments to the trip limit if warranted. For example, if may be warranted to change the post-closure trip limit if 3 months into a 6 month closure, landings are much higher or lower than anticipated in the table above).

Incidental Butterfish Trip Limits - Several factors may influence Council decision making:

- Current limits are 600 pounds unless the directed fishery closes before Oct 1, in which case the incidental and directed fisheries both go to a 250 pound trip limit, as occurred in 2011.
- Given the higher ABC, a higher post-closure trip limit may be warranted to help minimize regulatory discarding. A 1,000 pound pre-closure limit and a 500 pound post-closure limit are proposed. Staff will investigate if observer data provides additional information on incidental permit behavior (i.e. butterfish catch) before the Council meeting.
- If NERO executed an in-season adjustment to the 500 pound post-closure limit as described above, it would be anticipated that the change would apply to incidental permits as well to maximize consistency for fishery participants.

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M E M O R A N D U M

DATE: 31 May 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 May 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 23-24 May 2012 to review stock assessment information and develop acceptable biological catch (ABC) recommendations for four species under the management purview of the MAFMC: *Loligo* squid, *Illex* squid, butterfish, and Atlantic mackerel. The SSC also discussed the 2012 RSA project selection process, reviewed the butterfish cap methodology as requested by the Council, and discussed the next step in providing ecosystem science advice to the Council (the meeting agenda is attached).

A total of 14 SSC members were in attendance, which represented a quorum each day as defined by the SSC standard operating procedures. Also in attendance were representatives of the MAFMC, MAFMC staff, and the public. Stock assessment scientists from the NMFS Northeast Fisheries Science Center and staff from the NMFS Northeast Regional Office participated by phone during the ABC discussions (see attached attendance list).

The Council requested that the SSC review the longfin squid and Illex squid multiyear ABC recommendation set at the May 2011 SSC meeting to determine if any changes are necessary for 2013 based on the current best available science. If changes are deemed necessary, then the generic terms of reference should be followed. Based on updated catch and survey information presented by MAFMC and NEFSC staff, the SSC reaffirms the multi-year ABC levels it recommended last year for longfin squid (**23,400 mt**) and *Illex* squid (**24,000 mt**). Therefore, no further action by the SSC on these two species was necessary.

For butterfish and mackerel, 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 socioeconomics

then the SSC species lead on biology. 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 in some cases). 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 now posted on the SSC's website.

Butterfish

1) The materials considered in reaching its recommendations:

- *MAFMC staff memorandum from Jason Didden to Chris Moore, "2013 Atlantic Mackerel, *Illex,* Longfin squid, and Butterfish (MSB) OFL/ABC Recommendations," dated May 9, 2012. 20 pp.
- *Northeast Fisheries Science Center. 2010. 49th Northeast Regional Stock Assessment Workshop (49th SAW) Assessment Report. Ref. Doc. 10-03; 383 pp.
- *SARC 49 review panelist reports
- E-mail from Garden State Seafood Association, dated 22 May 2012.
- E-mail from Geir Monsen, dated 22 May 2012.
- *MAFMC Staff Report: Butterfish AP Informational Document, dated April 2011. 21 pp.
- *Miller, T., and P. Rago. 2012. Empirical exploration of feasible bounds on butterfish stock size and fishing mortality rates, 1975-2011. Report to the Mid-Atlantic Fishery Management Council Scientific and Statistical Committee. 14 pp.
- *MAFMC Staff. 2012. Butterfish indices numbers-per-tow spreadsheet.
- Pikitch, E., Boersma, P.D., Boyd, I.L., Conover, D.O., Cury, P., Essington, T., Heppell, S.S., Houde, E.D., Mangel, M., Pauly, D., Plagányi, É., Sainsbury, K., and Steneck, R.S. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. 108 pp.
- Patterson, K. (1992). Fisheries for small pelagic species: an empirical approach to management targets. Reviews in Fish and Fisheries 2:321-338.

*Available on the MAFMC SSC website prior to the meeting.

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:

Tier 4. No accepted OFL for the stock resulting from SAW/SARC. No accepted biological reference points resulting from SAW/SARC.

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:

An estimate of OFL was not available from the most recent stock assessment (49th SAW). The SSC used guidance from the literature, which recommended considering the ratio of the fishing mortality rate to the natural mortality rate (F:M) for small pelagic species. The SSC adopted a F:M ratio of 67% (Patterson 1992). For an assumed M = 0.8, this translates to an F = 0.536 as a maximum fishing mortality threshold (MFMT) proxy. Using the Miller and Rago table provided to the SSC at the meeting (attached), the lowest catch which achieves a median F = 0.536 is **16,800 mt**. This serves as an OFL proxy.

The SSC notes the following: (1) butterfish remains a level 4 species; (2) the MFMT proxy was derived from a meta-analysis of data for small pelagic species and is not specific to butterfish; (3) there is considerable variability and uncertainty in biomass trajectories for this species; (4) the reliability of the MFMT proxy is unknown, however, the estimates of catchability (q) and M used in the Miller and Rago analysis (Miller and Rago 2012) make the transition from the MFMT proxy to the OFL proxy conservative.

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

The SSC recommends an ABC of **8,400 mt** based on 50% of the OFL-proxy. In level 3 species, the SSC uses 75% of the OFL as a default for ABC, which would serve as the upper bound for a level 4 species. Additional buffering to 50% of the OFL-proxy was justified based on the observations that the short life history of butterfish gives limited time for management to respond to adverse patterns; recruitment of butterfish is highly variable and uncertain; the stock status of butterfish is unknown; and the susceptibility of butterfish to environmental and ecosystem variability, in particular inter-annual variability in natural mortality.

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 OFL and ABC are intended as a single-year specification. The SSC notes a new assessment is likely in 2013.

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

Not possible, given available information, but likely low.

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

- No accepted reference points;
- The use of the F:M ratio as a foundation for OFL-proxy determination;
- The use of the Miller and Rago "envelope analysis" for biomass and catch determination;
- Model-based estimates of biomass and F are generally imprecise;
- Discards remain imprecisely estimated;
- Probable large role of environmental drivers (including predation);
- Survey efficiency and stock area coverage;
- The imprecision of estimates of natural mortality;
- Possible low survey catchability (pelagic fish); and
- Conflicting trends among surveys.

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 considerations in the assessment model. Because of the short life span, the stock size is highly variable. This variability is likely more directly influenced by environmental factors and variation in predation mortality than it is for longer-lived species. Additionally, consumptive demand by other species was considered.

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

- Evaluate the potential for age structured assessment model and reference points;
- Evaluate sub-annual time step in assessment model;
- Re-evaluate natural mortality rate for formal inclusion in assessment model;
- Further analyze covariation and consistency of trends among surveys, to include analysis of spatial patterns in survey data to examine potential for changes in spatial distribution of population;
- Analyze additional estimation of consumptive demand of predators to identify critical periods of overlap of predators and prey;
- Continue support of habitat modeling to refine survey estimates;
- Reconsider stock structure and degree of exchange with south Atlantic stock component; and
- Calculate age- and size-structured efficiencies to convert R/V ALBATROSS estimates to R/V BIGELOW.

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.

The Council also asked the SSC to reaffirm the 2012 butterfish ABC recommendation with the justification requirements specified in MSB Framework 6. The SSC reaffirms its 2012 specification. The SSC notes that the most recent biomass indices appear to be without trend and increased for the last year, and that the ABC is not expected to result in overfishing. The SSC's justification for the ABC recommendation for the 2013 fishing year also support the conclusion that the **3,622 mt** ABC recommendation for 2012 fishing year is not expected to result in overfishing.

Atlantic Mackerel

1) The materials considered in reaching its recommendations:

- *MAFMC staff memorandum from Jason Didden to Chris Moore, "2013 Atlantic Mackerel, *Illex,* Longfin squid, and Butterfish (MSB) OFL/ABC Recommendations," dated May 9, 2012. 20 pp.
- *MAFMC Staff Report: Mackerel AP Informational Document, dated April 2012. 18 pp.
- *Transboundary Resources Assessment Committee. 2010. Atlantic mackerel in the Northwest Atlantic - 2009 (NAFO Subareas 2 – 6). Summary of Status Report 2010/01. 12 pp.
- *Deroba, J. J., G. Shepherd, F. Gregoire, J. Nieland, and J. Link. 2010. Stock assessment of Atlantic mackerel in the Northwest Atlantic – 2009. Transboundary Resource Assessment Committee. Reference Document 2010/01. 64 pp.
- E-mail from Garden State Seafood Association to John Boreman, dated 22 May 2012.
- E-mail from Geir Monsen to John Boreman, dated 22 May 2012.
- Cope, J. M., and A. E. Punt. 2009. Drawing the lines: resolving fishery management units with simple fisheries data. Canadian Journal of Fisheries and Aquatic Sciences 66, 1256-1273.

*Available on the MAFMC SSC website prior to the meeting.

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 4: an OFL was not provided in the most recent stock assessment (2010 TRAC).

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:

An estimate of OFL was not provided in the most recent stock assessment (2010 TRAC), and thus the SSC cannot provide a catch in weight associated with OFL.

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 recommends an ABC of **80,000 mt**, based on the results of the TRAC. No information was presented to the SSC to cause the SSC to deviate from the TRAC recommendation. Survey data are inconclusive because of potential changes in catchability in the change from R/V ALBATROSS to R/V BIGELOW have yet to adequately specified, particularly, the current lack of estimates of length-specific catchability. Also, concerns remain over the extent to which the survey provides a reliable index of abundance given changes in availability. Mackerel catch data may be inconclusive because catch may not be a reliable index of abundance owing to concerns related to availability and the short duration of the fishing season; high fuel prices may have continued to limit the flexibility of the fishery to search for mackerel; and interactions with the herring fishery, acting through herring catch caps, may have limited the activity of the mackerel fleet

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. The SSC notes that a new Canadian assessment is forthcoming shortly, and that a US assessment is tentatively scheduled for 2014.

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

No OFL is available for this stock, and thus it is not possible to provide a quantitative estimate of the probability of overfishing. Also, the SSC is unable to specify in a qualitative sense the level of risk assumed by the adoption of the recommended ABC.

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

- Disparate trend between NEFSC trawl survey and both the commercial CPUE trend and landings;
- Apparent, but not fully explainable changes in survey catchability, which may alias a number of unidentified factors;

- Lack of quantification of the linkage between US and Canadian catches;
- Surveys cover an unknown portion of entire range (variable availability);
- No Canadian discard information and poor precision of U.S. discard and recreational estimates (though likely low);
- Using a bottom trawl survey gear for a semi-pelagic species may induce variation in the indices of abundance and obscure the signal;
- Conflicting catch-at-age and survey information;
- No satisfactory explanation of model retrospectives;
- Natural mortality is highly uncertain and source of predation are not fully quantified; and
- The constant catch approach to setting ABC becomes more risky the further out from a previous assessment one considers.

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:

The assessment used a variable natural mortality (M) at age (estimates of M at age averaged among years from the ASAP predation model) to account for predation. The SSC notes that this approach may not fully account for all predation losses. The SSC also notes that the assessment was not accepted.

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

- Explore patterns in consumption as an additional index of abundance;
- Collaborate with industry to explore the spatial and temporal pattern and variability in catch to evaluate issues of abundance and availability;
- Consider tagging studies to directly evaluate movement patterns;
- Examine covariation among survey and fishery-dependent indices (Cope and Punt 2009);
- Examine growth trajectories from different areas of the stock to evaluate possible stock structure
- Evaluate spatial catch patterns in the small pelagic fisheries to identify "hot spots" of co-occurrence; and
- Explore management complementarities among small pelagic fisheries (e.g., mackerel, herring and river herring).

The SSC also endorses the following research recommendations developed during the 2010 TRAC:

- Explore opportunities for the development of alternative indices of abundance.
- Attempt to develop total stock abundance.
- Initiate broad scale international egg surveys covering potential spawning habitat that is consistently representative of the total stock area, including the shelf break. Investigate potential to conduct work in cooperation with commercial fishing industry (priority: high, long term).
- Explore spatial distribution of stock relative to the mixing of the northern and southern 'contingents' of mackerel i.e. tagging, genetics, chemical assay, microchemistry of otoliths (priority: high, medium-long term).
- Explore influence of environmental factors on spatial distribution of the stock e.g. rate of mixing and distribution of stock relative to the survey area (high priority, short term).
- Extend predation estimates to include DFO data and entire predator spectrum (marine mammals, highly migratory species).
- Examine methodology for incorporating consumptions estimates in the assessment.
- Quantify the magnitude of additional sources of mortality in Canada including the bait fishery,

recreational catch and discards (high priority; short term).
- Explore bottom trawl characteristics for catchability of mackerel.
- Participate with industry in investigating the contemporary overlap of survey stock area, commercial fishery, and mackerel distribution and explore historical databases for the same purpose to better understand interpretation of abundance indices (survey, cpue) (medium term).
- Collaborate with industry to investigate alternative sampling gear (i.e. jigging) to survey adult abundance (long term)
- Explore MARMAP database relative to spatial distribution of survey indices.
- Investigate alternative assessment models that incorporate spatial structure (i.e. northern and southern contingents, different age groups).
- Explore alternative assessment models that incorporate covariates.
- Initiate a technical TRAC WG in order to advance and monitor progress of research recommendations.

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.

Review of the Butterfish Mortality Cap

Amendment 10 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan implemented a butterfish mortality cap on the longfin squid (*Loligo*) fishery in order to rebuild the butterfish stock. The longfin squid fishery has recently accounted for most butterfish mortality given the lack of a currently operating large-scale directed butterfish fishery. The original plan was to base the cap on a rebuilding F (F = 0.1) applied to the most recent butterfish biomass estimate and to have the SSC review the operation of the cap "to assure the rebuilding of the butterfish stock." Given the findings of the most recent assessment, there is currently no butterfish biomass estimate and no rebuilding target. As such, it is not possible for the SSC to comment on how the cap may be facilitating butterfish rebuilding. However, a review of the methodology to estimate the cap is appropriate. Therefore, the Council asked the SSC to review the implementation of the butterfish cap to determine if it is controlling fishing mortality, and to provide recommendations for improving the estimation methodology, as appropriate.

After a briefing on the topic by MAFMC staff (Jason Didden), the SSC concluded that the butterfish cap is controlling what it is supposed to be controlling, but it does not cover all sources of fishing mortality on the species in the mid-Atlantic. In particular, it does not cover the small mesh non-capped fishery. The SSC recommends that the butterfish mortality cap should be extended to include the small-mesh fishery or that expected butterfish mortality in the small mesh non-capped fishery be addressed by setting aside a portion of the ABC so that overall ABC overages are avoided and/or minimized.

RSA Project Selection Process

Recent decisions by the Council call for more involvement of SSC members in the oversight of projects supported with research set-aside funds. The SSC members agreed to individually rank the topics of the proposals submitted for funding this year, promising to keep the topics and their rankings confidential. SSC members who are affiliated with one or more of the proposals should recuse themselves from the ranking process.

Ecosystem Approaches to Fishery Management Guidance Document

Jason Link and Rich Seagraves briefed the SSC on the current draft of a proposed outline for the subject document. The SSC decided that a special meeting of the Ecosystems Subcommittee is necessary so that a full day of discussion can be devoted to improving the outline and identifying informational sources for the topics to be addressed in the document. The SSC also suggested that the subcommittee consider splitting the document into a source document, containing background information on the ecosystem, and a guidance document for fishery management.

Attachments

cc: MAFMC SSC members, R. Seagraves, L. Anderson, J. Didden, J. Saunders

Mid-Atlantic Fishery Management Council
Scientific and Statistical Committee Meeting[1]
May 23-24, 2012
Agenda

May 23, 2012

1000 Butterfish ABC recommendation
1200 Lunch
1300 Butterfish ABC cont.
1500 Review butterfish mortality cap program performance
1700 Adjourn

May 24, 2012

0830 Atlantic mackerel ABC recommendation
1030 Review 2012-2014 Loligo and Illex ABC Recommendations
1130 Review 2012 RSA Program Funded Projects
1200 Ecosystem Subcommittee Report (review and comment on EAFM Guidance Document Outline)

[1] Pier V Hotel, 711 Eastern Avenue, Baltimore MD 21202, (410-539-2000)

MAFMC Scientific and Statistical Committee Meeting
Baltimore, MD

May 23-24, 2012

SSC Members in Attendance

Name	Affiliation
John Boreman (SSC Chairman)	North Carolina State University
Tom Miller (SSC Vice-Chair)	University of Maryland - CBL
Mike Wilberg	University of Maryland - CBL
Robert Latour	Virginia Institute of Marine Science
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
Marty Smith	Duke University
Jason Link	NMFS/NEFSC
Mike Frisk	SUNY Stony Brook

Others in attendance

Rich Seagraves	MAFMC staff
Jason Didden	MAFMC staff
Rick Robins	MAFMC Chair
Fred Serchuk	NMFS/NEFSC
Jeff Kaelin	Lunds Fisheries
Greg DiDomenico	Garden State Seafood Association
Kristen Cervoli	Pew Foundation

By phone

Lisa Hendrickson (May 24 only)	NMFS/NEFSC
Kiersten Curti (May 23 only)	NMFS/NEFSC
Tim Miller (May 23 only)	NMFS/NEFSC
Aja Peters-Mason	NMFS/NERO
Charles Adams	NMFS/NEFSC
Lindsey Feldman	NMFS/NEFSC

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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Chairman

Lee G. Anderson
Vice Chairman

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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
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MAFMC Scientific and Statistical Committee Meeting
Baltimore, MD

May 23-24, 2011

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Ed Houde	University of Maryland - CBL
Doug Vaughan	North Carolina
Marty Smith	Duke University
Jason Link	NMFS/NEFSC
Mike Frisk	SUNY Stony Brook

Others in attendance

Paul Rago	NMFS/NEFSC
Rich Seagraves	MAFMC staff
Jason Didden	MAFMC staff
Rick Robins	MAFMC Chair
Fred Serchuk	NMFS/NEFSC
Jeff Kaelin	Lunds Fisheries
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