Documents pertaining to Scallop fishery allocations of yellowtail flounder

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MEMORANDUM

DATE: October 10, 2012

TO: Scallop and Groundfish Committees

FROM: Scallop Plan Development Team (PDT)

SUBJECT: **Preliminary estimates of YT catch for the Framework 24 scallop specification alternatives under consideration**

The Scallop PDT reviewed preliminary estimates of YT catch for 2013-2015 at a PDT meeting on October 9, 2012. Framework 24 is setting specifications for FY2013-FY2014, with default measures for 2015. The Council may decide to make this an annual specification package (FY2013 only with default measures for FY2014), but the action is considering both.

Yellowtail Bycatch Estimate Method

The estimate of YT catch uses the same method used in the past, which has three basic steps. First a discard to kept ratio (D:K) is estimated from the most recent observer data available. This estimate includes a D:K ratio for all GB access areas (CA1, CA2, and NL) using all 2012 observed trips to date (March-August only). For open areas and scallop access areas in the Mid-Atlantic the overall D:K ratio was calculated using all observed trips in 2011 (March 2011-Feb 2012). Second, a projection of YT biomass for 2013-2015 is needed. That information comes from the most recent stock assessments for both SNE/MA and GB YT flounder. Finally, projections of area specific scallop biomass are used for 2013-2015 from the SAMS model. These three elements are combined into the formula below:

$$\text{Pred. YT D:K} = \text{Obs. D:K} * \frac{ScallopEBms_{baseyear}}{ScallopEBms_{projyear}} \frac{YTBms_{projyear}}{YTBms_{baseyear}}$$

Scallop Access Area Alternatives

There are a range of possible scallop fishery specifications under consideration, No Action as well as four other alternatives. All of the alternatives include a closure of Elephant Trunk in 2013 and 2014, Delmarva closure in 2013 and access in 2014, closure of Hudson Canyon in 2014 and 2015, and 33 open area DAS in 2013 and 31 in 2014. The only variation among the alternatives is the level of effort in GB access areas in terms of the number of trips and which areas are open. Table 1 below summarizes the various alternatives.

Table 1 – Summary of FW24 fishery specification alternatives

	Description of Alternative	Total AA catch per FT vessel
Alt 1	2013: Two 13,000 pound trips in CA1, CA2, and HC 2014: Two 15,000 pound trips in CA2, NL and DMV	26,000 30,000
Alt 2 (spread effort)	2013: Two 13,000 pound trips in CA1, CA2, NL, and HC 2014: Two 15,000 pound trips in CA2, NL and DMV	26,000 30,000
Alt 3 (No CA1 effort)	2013: One 18,000 pound trip in CA2 and HC 2014: Two 15,000 pound trips in CA2, NL and DMV	18,000 30,000
Alt 4 (Low YT catch)	2013: One 18,000 pound trip in CA1, CA2, NL, and HC 2014: Two 15,000 pound trips in in CA2, NL and DMV	18,000 30,000
No Action	2013: Four 18,000 trips in CA2, NL, HC and DMV 2014: Four 18,000 trips in CA2, NL, HC and DMV	72,000 72,000

Estimates of YT catch

All of these specification alternatives have a different estimate of YT catch as a function of the various alternatives that differentially partition effort in the GB access areas. For all of the estimates the same assumption was used for open area catch, which is a function of the exploitable biomass in open areas. In general, the estimate of YT bycatch is positively correlated to amount of effort in CA2 (i.e. the more access to CA2, the greater the estimate of GB YT catch). Table 2 is a summary of the YT catch estimates.

Table 2 –Summary of GB YT catch estimates for the various scallop specification alternatives (2013-2014)

	No Action		**Alt1**		**Alt2**		**Alt3**		**Alt4**	
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
GBOp	27	33	34	41	34	41	34	41	34	41
CL1	0	0	2	0	2	0	0	0	2	0
CL2	194	285	139	161	98	169	111	132	37	57
Total	222	318	175	202	134	210	145	173	73	97
% US TAC*	103%		82%		62%		40%		34%	

* Assuming US ACL equivalent to 215 mt

The projections of SNE/MA YT catch do not seem to be an issue for 2013 and 2014 in terms of what is available to the fishery. FW48 does not specify how the allocation will be determined, so the GF Committee will need to specify a value for FW48, but not based on a particular method.

Table 3 –Summary of SNE/MA YT catch estimates for the various scallop specification alternatives (2013-2014)

2013					
	No Action	Alt1	Alt2	Alt3	Alt4
Open	23	28	28	28	28
NL	15	0	4	0	4
HC	0	0	0	0	0
ET	1	0	0	0	0
Total	39	28	33	28	32
2014					
	No Action	Alt1	Alt2	Alt3	Alt4
Open	21	26	26	26	26
NL	17	11	12	11	12
HC	1	0	0	0	0
ET	1	0	0	0	0
Total	40	37	38	37	38

Scallop PDT Discussion

The Scallop PDT discussed possible preferred alternatives for FW24 specifications. **Overall, the PDT recommends that Alternative 2 has similar impacts on scallop biomass compared to other alternatives, but it results in the largest economic gains in the long term.** Alternative 2 has the highest long term net economic benefits and minimizes the short term losses from effort reductions compared to the other alternatives (Table 3 and Table 4). Reducing effort in Hudson Canyon in 2013 likely has higher benefits overall due to reduced impacts on the strong recruitment in that area. **However, due to the very low GB YT available in 2013 (215 mt for the US share) the PDT supports that Alternative 4 may be the most realistic alternative when other issues are taken into consideration like YT bycatch.** This alternative projects 97 mt of GB YT catch, 40% less YT than Alternative 2 at 176 mt, but still 40% of the total US TAC of 215 mt. This alternative has higher possession limits (18,000 pounds), which may not be ideal with lower scallop biomass, but Alternative 4 has the lowest YT catch and is preferable to Alternative 3 because it spreads effort out in 2013.

Table 4. Scallop Revenue by Fishyear (Million $, in 2011 constant prices)

Fishing year	No Action	ALT1	ALT2	ALT3	ALT4	Status quo
2013	448.4	393.5	393.4	368.9	380.9	505.0
2014	434.9	395.0	396.3	398.1	384.5	488.1
2015	470.9	440.5	445.5	452.6	447.9	508.0
2016	502.2	488.0	492.2	489.8	485.8	452.1
2017	499.5	507.3	506.2	510.3	501.6	460.1
2018	523.9	504.2	509.5	504.4	501.4	475.0
2019	485.9	534.9	548.7	532.7	535.4	486.0
2020	486.8	533.8	541.6	528.8	527.6	493.9
2021	490.8	525.0	531.5	520.9	519.8	497.6
2022	495.5	520.2	522.8	515.9	514.1	500.6
2023	498.2	516.6	514.6	511.3	511.9	505.0
2024	498.2	514.4	508.3	508.1	511.0	506.2
2025	500.3	513.3	506.8	506.5	505.8	506.1
2026	501.2	510.6	506.3	506.2	499.6	504.2
Grand Total	**6837.0**	**6897.2**	**6923.8**	**6854.5**	**6827.3**	**6887.9**

Table 5. Cost and Benefits for Alternative Scenarios Net of No Action Values ($ Million, Cumulative present values discounted at 3%)

Period	Values	No Action	ALT1	ALT2	ALT3	ALT4	Status quo
2013-2015	Total revenue		-112.0	-106.5	-121.2	-126.3	131.1
	Total trip Costs		-26.7	-27.6	-28.8	-30.9	16.6
	Total producer Surplus		-85.3	-78.9	-92.4	-95.4	114.5
	Total Consumer Surplus		-10.8	-10.4	-11.2	-12.3	18.5
	Total benefits		-96.1	-89.2	-103.6	-107.8	133.0
2016-2018	Total revenue		-21.2	-14.4	-17.1	-29.9	-112.7
	Total trip Costs		-3.9	-3.8	-3.7	-4.9	-7.3
	Total producer Surplus		-17.3	-10.6	-13.4	-25.1	-105.4
	Total Consumer Surplus		-2.7	-1.7	-2.2	-4.2	-19.1
	Total benefits		-20.0	-12.3	-15.5	-29.2	-124.5
2019-2026	Total revenue		151.8	162.5	125.6	122.5	29.2
	Total trip Costs		9.3	9.7	7.7	7.4	2.0
	Total producer Surplus		142.5	152.9	117.9	115.2	27.2
	Total Consumer Surplus		24.3	25.1	19.4	18.4	4.1
	Total benefits		166.9	178.0	137.3	133.6	31.3
2013-2026	Total revenue		**18.7**	**41.7**	**-12.7**	**-33.7**	**47.6**
	Total trip Costs		**-21.3**	**-21.7**	**-24.8**	**-28.4**	**11.3**
	Total producer Surplus		**40.0**	**63.5**	**12.1**	**-5.3**	**36.4**
	Total Consumer Surplus		**10.7**	**13.0**	**6.0**	**1.9**	**3.5**
	Total benefits		**50.7**	**76.5**	**18.2**	**-3.4**	**39.9**

Groundfish Framework 48 is considering two alternatives for allocating the GB YT sub-ACL. The first alternative is a range of 8-16% of the total ACL. For 2013 that is equivalent to 17.2 mt to 34.4 mt. The second alternative is 90% of the projected catch estimate. For Alternative 2 that would be 158.4 mt (90% of 176 mt), and for Alternative 4 that is equivalent to 87.3 mt (90% of 97 mt). Both of these alternatives are problematic for the scallop fishery since current estimates of YT catch for all of the specification alternatives are a high percentage of the total available GB YT catch. The FW24 specification alternatives are already 30% lower than recent catch levels; therefore, if further reductions are needed to reduce YT catch there will be additional losses to the scallop fishery.

The Scallop PDT does caution that these are point estimates and could be underestimates for several important reasons. First, the bycatch rate for GB access areas uses 2012 observed trips from March – August only. This rate will likely increase once observed trips from the fall are included because bycatch rates are typically higher in CA2 during the fall compared to the spring and summer. Many of the access areas are getting fished out, and as scallop biomass declines, YT bycatch rates may increase due to increases in towing time. Therefore, bycatch rates from 2011 and 2012 used in these analyses are probably lower than the realized rates for 2013 and 2014.

Therefore, the Scallop PDT prepared some sensitivity analyses for the YT catch estimates provided above. A similar analysis was prepared earlier this year when the Council and NMFS considered shifting some 2012 GB YT sub-ACL to the GF fishery from the scallop fishery. A low estimate of YT catch uses a bycatch rate about half of the medium estimate, and the high estimate doubles the bycatch rate.

Table 6 – Summary of GB YT catch estimates (Low, medium and high)

	No Action		Alt1		Alt2		Alt3		Alt4	
LOW										
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
GBOp	14	18	17	23	17	23	17	23	17	23
CL1	0	0	1	0	1	0	0	0	1	0
CL2	92	146	59	47	46	87	52	68	18	29
Total	105	165	77	70	64	109	70	90	35	52
MEDIUM										
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
GBOp	27	33	34	41	34	41	34	41	34	41
CL1	0	0	2	0	2	0	0	0	2	0
CL2	194	285	139	161	98	169	111	132	37	57
Total	222	318	175	202	134	210	145	173	73	97
HIGH										
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
GBOp	47	55	59	67	59	67	59	67	59	67
CL1	0	0	4	0	3	0	0	0	3	0
CL2	353	501	257	318	178	297	202	231	67	99
Total	400	556	319	385	240	364	260	299	129	166

Scallop FW24 - Modification of Georges Bank access area seasonal restriction alternatives

Alt 1 – No Action – All areas closed Feb 1 – June 14 (4.5 month closure)

Alt 2 – Modify Seasonal restrictions

Option 1 – Close area when scallop meat weights lowest
All areas close October 1 – April 30 (or Sept 15 – April 15) (7 month closure)

Option 2 – Close area when YT bycatch rate highest
All areas close from September 1 – November 30 (3 month closure)

Option 3A – Closure period would take into account scallop meat weights, YT bycatch, and traditional fishing trends
- NL – Closed September 1 – November 30 (or Aug15-Nov30) and again March1-April 15 (or March1-March 31) (4 month closure)
- CA1 and CA2 – Closed Sept 1 – April 1 (Sept 15 through April 15) (7 month closure)

Option 3B – AP Recommendation – For CA2 bycatch rate highest in fall and meat weights the lowest. CA1 not a high bycatch area and NL lower rate than open areas
- CA2 – Closed August 15 through November 15 (3 month closure)
- CA1 and NL – no closure

*** Committee replaced 3A with 3B at last meeting but Scallop PDT requesting they reconsider it or develop a new alternative that includes seasonal restrictions for high YT bycatch rates and low scallop meat weights.*

Alt 3 – Eliminate seasonal restrictions

Table 1 – Summary of GB seasonal restriction alternatives under consideration in FW24

	No Action Alt 1	Alternative 2 – modify season						Eliminate season Alt 3	GF FW48 Alternative for sector exemptions	
		Option 1	Option 2	Option 3A**		Option 3B				
Access Area	All areas	All areas	All areas	NL	CA1/CA2	NL	CA1/CA2	All Areas	NL	CA1/CA2***
Mar	C	C	O	C	C	O	O	O	O	C
Apr	C	C*	O	O*	O*	O	O	O	O	C
May	C	O	O	O	O	O	O	O	O	O
Jun	O (6/15)	O	O	O	O	O	O	O	O	O
Jul	O	O	O	O	O	O	O	O	O	O
Aug	O	O	O	O	O	C (Aug 15)	O	O	O	O
Sep	O	O*	C	C*	C*	C	O	O	O	O
Oct	O	C	C	C	C	C	O	O	O	O
Nov	O	C	C	C	C	C (Nov 15)	O	O	O	O
Dec	O	C	O	O	C	O	O	O	O	O
Jan	O	C	O	O	C	O	O	O	O	O
Feb	C	C	O	O	C	O	O	O	O	O(2/15)
Total Months Closed	**4.5**	**7**	**3**	**4**	**7**	**3**	**0**	**0**	**0**	**2.5**

* date may vary as much as 15-30 days in either direction based on additional PDT discussion

** Scallop Cmte replaced Option 3A with 3B, but Scallop PDT wants Committee to reconsider or develop a different alternative that is similar

*** Only open to GF vessels that use "selective" gears (Rhule trawl, separator trawl, longline gear, etc.)
Does not inlcude sink gillnets or recreational fishing.

Note the GF Cmte alternative would also open the WGOM area year round to all gears (except for Jeffrey's Ledge Habitat) as well as Cashes Ledge area (except for the areas around Ammen rock).

More detailed description of alternatives

1. **No Action GB access area seasonal restrictions – closure from Feb. 1 – June 14**

The access areas in Closed Area I, Closed Area II, and Nantucket Lightship would remain closed to scallop fishing from February 1 through June 14. Any access area trips in those three areas would be restricted to take place between June 15 and January 31.

2. **Modify GB access area seasonal restrictions**

Based on two primary sources of analyses the options in this section were developed. The first source of information is an analysis the Scallop PDT completed using observer data in and around access areas on GB. A generalized linear model (GLM) was developed to estimate bycatch rates by month using observer data from months the access areas have been open and modeling the bycatch rates for months the areas have been closed using data observer data from surrounding open areas.

The second source of information is based on results from a 2011 RSA project titled, "*Optimizing the Georges Bank Scallop Fishery by Maximizing Meat Yield and Minimizing Bycatch.*" Fourteen research trips were conducted in both Closed Area I and II from October 2010 through April 2012. Seasonal variations in scallop meat weights and YT flounder bycatch rates were evaluated. The Research Steering Committee reviewed the methods and results for this final report submitted in June 2012 and deemed it sufficient for the PDTs to use in developing management measures, even though additional data will be collected over the next year.

- **Option 1 - Closure period would be modified to provide access during months with highest scallop meat weights to reduce fishing time and scallop fishing mortality**

The Scallop PDT reviewed the observer and RSA monthly bycatch data and recommends that one alternative be considered that is primarily based on scallop meat weight variations. The month with the highest meat weights on GB is typically June, and the lowest is October. The average meat weights are about 20% greater in June than in October (See Section ??? for more information about scallop meat weight variation by season).

Since there is a possession limit for access area trips vessels are limited to a specific poundage per trip. Therefore, the greater the meat weight per animal the fewer scallops will be harvested and reduce fishing time compared to fishing when scallop meats weights are less. This translates into less potential bycatch and lower scallop fishing mortality compared to months with lower scallop meat weights in the fall and winter and higher YT bycatch rates in the fall.

The PDT recommends this alternative close all three access areas from about October 1 – April 30 or modify that period slightly to close September 15 – April 15. The areas would be closed for about 7 months and open for about 5. All three access areas would have the same schedule.

- **Option 2 - Closure period would be modified to only the months with highest yellowtail flounder bycatch**

The Scallop PDT reviewed the observer and RSA monthly bycatch data and recommends that one alternative be considered that would only close the areas during the time of year with highest YT bycatch rates and presence of YT. Looking at both sources of data, the months when YT bycatch rates are highest are September – December (See section ??? for a summary of the monthly bycatch rate information).

The PDT recommends this alternative close all three access areas from September 1 – December 31.

- **Option 3A - Closure period would take into account scallop meat weights, YT bycatch, and traditional fishing trends**

The Scallop PDT also discussed that it could be beneficial to consider an alternative that is based on the months when meat weights are poor, YT bycatch is high, and also takes into account traditional fishing trends. Specifically, this alternative would close the areas consistent with Option 2 when YT bycatch rates are highest, but it would be slightly more restrictive to also limit fishing when scallop meats are poor to reduce scallop fishing mortality. Finally, this alternative would also provide for a very limited amount of fishing in the winter in Nantucket Lightship only – an area that is closer to shore and traditionally used by some vessels for a "Christmas trip".

The PDT recommends that this alternative close all three access areas from September 1 – March 31 (or from Sept 15 – April 14) but re-open Nantucket Lightship only from December 1 – February 29.

- Closed Area I – open April 1 (April 15) through August 31 (September 14)
- Closed Area II – open April 1 (April 15) through August 31 (September 14)
- Nantucket Lightship – open April 1 (April 15) through August 31 (September 14) and again December 1 – February 29

THE COMMITTEE REPLACED THIS ALTERNATIVE WITH THE ONE BELOW. HOWEVER, THE PDT MET ON OCTOBER 9 AND RECOMMENDS THAT THE COMMITTEE RECONSIDER THIS ALTERNATIVE OR CONSIDER INCLDING A NEW ONE THAT INCORPORATES A SEASONAL CLOSURE ALTERANTIVE THAT INCORPORATES BOTH HIGH YT CATCH RATES AND LOW SCALLOP MEAT WEIGHTS BECAUSE OPTION 1, 2 AND 3b DO NOT ACCOMPLISH BOTH.

- **Option 3B – AP Recommendation – Committee included in September - Close CA2 from August 15 – November 15 only. CA1 and NL would not have any seasonal restrictions**

Based on an AP recommendation, the Committee revised one of the GB seasonal closure alternatives so that only CA2 would be closed from Aug15-Nov15 and no closures for CA1 and NL. The main rationale provided from the AP meeting was that overall bycatch is low in CA1 and there does not seem to be a strong seasonal difference. For NL the bycatch rates of SNE/MA YT are not as high in the access area compared to other areas farther west (south of Long Island). Therefore, imposing a seasonal restriction may not do much and could actually shift effort into higher bycatch areas if vessels fish in open areas when NL is closed. Based on input from the monthly bycatch program in CA2 it was explained that there are areas outside of CA2 (to the south and west) that have high bycatch of YT in June and July, but then fish seem to move on the bank in late summer and fall (in Closed Area 2). It should be noted that WP flounder bycatch is highest in CA2 between Jan-March. Therefore, overall for CA2, the Aug15-Nov15 season is a combination of the lowest meat weights and highest YT bycatch.

3. **Eliminate GB access area seasonal restrictions**

This alternative would remove any seasonal restriction for scallop fishing in portions of the existing GF closed areas. This alternative may be selected if it is found that limited scallop fishing in portions of the GF closed areas year round would not have substantial negative impacts on groundfish mortality and spawning.

The current seasonal closures have been in place since 1999, the first year the scallop fishery was granted access into Closed Area II. Framework 11 ultimately prohibited scallop fishing from February 1 through June 14 to avoid disrupting spawning aggregations of overfished groundfish stocks that spawn primarily during the spring and early summer months.