



New England Fishery Management Council

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MEMORANDUM

DATE: November 22, 2017
TO: Scallop Committee
FROM: Scallop PDT
SUBJECT: **Evaluation of Projected Flatfish Catch in Framework 29**

At their meeting on October 26, 2017, the Scallop Committee passed the following motion on a unanimous vote (11-0-0):

Move that the Committee task the PDT to 1) compare the FW29 flatfish bycatch projections to potential flatfish sub-ACL values being developed for FY2018; and 2) in cases where the projected scallop fishery bycatch exceeds the scallop fishery sub-ACL in 2018 develop options for reducing bycatch for inclusion in FW29.

The Scallop PDT has completed its FY 2018 projections of scallop fishery bycatch of Georges Bank yellowtail flounder, Northern windowpane flounder, Southern New England/Mid-Atlantic yellowtail flounder, and Southern windowpane flounder. A comparison of projected catch with potential FY 2018 sub-ACLs is shown in Table 1. Bycatch estimates for 2018 exceed the scallop sub-ACLs for Georges Bank yellowtail flounder, Northern windowpane flounder, and Southern windowpane flounder. To address part two of Committee tasking, the Scallop PDT discussed 1) existing measures in the Scallop FMP designed to reduce flatfish bycatch, 2) the impact of spatial management on scallop fishery bycatch, 3) measures in Framework 29 that are anticipated to reduce bycatch, and 4) stock-specific options for proactively reducing bycatch in FW29.

The flatfish bycatch projections are forecasts (with error) and should not be interpreted as precise estimates. Out-year projections (FY 2019 – FY 2021) should be viewed with additional skepticism because the underlying scallop fishery assumptions that drive bycatch estimates (ex: total DAS, which access areas are open and closed) are likely to change. This is further exacerbated by the uncertainty of where the scallop fishery may fish in the future depending on the outcome of OHA2. In general, the PDT feels that estimates represent a reasonable approximation of catch that may occur. Review of past estimates has shown the projections have both over-estimated and under-estimated catches. It is important to note that the methods and underlying assumptions used for in-season catch accounting may vary from the methods used by the Scallop PDT to project catch. Several scenarios and alternatives consider access to areas that have been closed as EFH or have not been traditionally fished. The Scallop PDT attempted to address data deficiencies in these areas by developing GAM models and expanding on the methods that have been used to project bycatch in the past. However, there is considerable

uncertainty around the estimates for these EFH areas and for parts of access areas that the fleet has not typically directed effort (i.e. NLS-South).

Table 1 - Comparison of projected bycatch of flatfish stocks and anticipated sub-ACLs for FY 2018

	Georges Bank Yellowtail	Northern Windowpane	SNE/MA Yellowtail	Southern Windowpane
Overfished?	Unknown	Yes	Yes	No
Overfishing?	Unknown	No	Yes	No
2018 US ABC	213	92	52	473
Scallop Allocation (%)	16%	21%		36%
Sub-ACL	33	18		158
Range of Projected Catch	5.57 - 43.44	46.69 - 68.08	3.84 - 5.25	228.6 - 308.23

Table 2 - FW29 Flatfish Catch Projections for stocks with sub-ACLs, values in metric tons.

Scenario	SAMS Run	NWP	GBYT	SNEYT	SWP	SUM Total of Projections
No Action	na	44.96	6.06	4.47	33.73	89.22
Status Quo	sq	74.79	67.95	5.96	236.53	385.23
1	Base36	57.18	36.46	4.16	236.53	334.33
	Base40	60.54	36.92	4.51	250.57	352.54
	Base44	63.74	37.36	4.84	263.5	369.44
2	NLSW36	46.69	5.57	4.89	294.1	351.25
	NLSW40	50.64	6.04	5.25	308.23	370.16
3	5BOTH36	57.59	12.55	4.64	264.14	338.92
	5BOTH40	61.54	13.02	5	278.27	357.83
	6BOTH295	50.68	11.72	4.2	261.74	328.34
	6BOTH26	46.72	11.25	3.84	246.34	308.15
4	CA136	68.08	43.44	4.15	228.6	344.27

1. Existing measures in the Scallop FMP that are designed to reduce flatfish bycatch

The Council has implemented a range of fishery-wide measures aimed at reducing flatfish bycatch in the scallop fishery. These include:

- 1) Minimum 10" twine top
- 2) A maximum apron length of 7-rows
- 3) Zero possession of all yellowtail and windowpane stocks
- 4) Seasonal closure of Closed Area II to protect yellowtail, and secondarily windowpane

- 5) In general, measures designed to reduce the catch of a particular stock (like the seasonal closure of Closed Area II) also reduce impacts on other flatfish stocks, such as Northern windowpane.

2. The impact of spatial management on scallop fishery bycatch

The Council is considering a wide range of specification options in Framework 29 that consider varying spatial management scenarios. Where the fishery is allocated access area trips plays a substantial role in the bycatch projections for the coming year, and the impacts of rotational management on flatfish stocks are likely to be mixed. For example, Alternatives that allocate an access area trip to Closed Area II in 2018 have the highest bycatch estimates of Georges Bank yellowtail flounder (~36 mt - ~46 mt). Closing Closed Area II in 2018 results in substantially lower bycatch estimates of yellowtail (~5.5 mt - ~13 mt), which are below the sub-ACL for this stock. Closing Closed Area II in 2018 also reduces bycatch estimates for Northern windowpane flounder (compare Scenario 1 or 4 measures with Scenario 2 or 3 measures).

- 1) **The PDT recommends that all OHA2 approval scenarios (2, 3, 4 in Error! Reference source not found.) are preferable to status quo (Scenario 1 - No changes through OHA2).** Scenarios 2, 3 and 4, are anticipated to help reduce and minimize impacts on all flatfish stocks that the fishery has sub-ACLs for.
- 2) **Under Scenario 2 (both NLS-West and CAI available): If the Council wants to further reduce impacts on open bottom, the PDT recommends a 6 trip option.** The 6 trip options in Scenario 2 also have the lowest area swept and some of the lowest bycatch estimates of all runs developed for FW 29. Both 6 access area trip options result in the lowest overall estimates of scallop bycatch.

3. Potential measures in Framework 29 that are anticipated to reduce bycatch

There are several measures that could be pursued in Framework 29 that are anticipated to reduce flatfish bycatch:

- 3) **Given the option between an open area $F=0.4$ and $F=0.36$, the PDT recommends fishing open areas at an $F=0.36$** for the following reasons: 1) surveys (both dredge and optical) have detected unremarkable recruitment in the open bottom for multiple years meaning the fishery will be working on the same year classes of animals in open areas for at least the next two years, perhaps longer; 2) the open bottom was fished at a high fishing mortality rate in FW25 ($F>0.48$), which resulted in a lower DAS allocation in subsequent years; 3) fishing mortality is 10% lower under the $F=0.36$ option, and short term LPUE is expected to be higher; 4) scallops that are not fished in 2018 will likely be larger in 2019; 5) projected bycatch estimates are also lower under this option.
- 4) **The PDT recommends that the Council prohibit RSA compensation fishing in Closed Area II Access Area for FY2018.** This would include the CAII-extension area that would become part of the Closed Area II access area. The rationale is the same as in Framework 28: Prohibiting RSA compensation fishing in CAII is expected to reduce impacts on Georges Bank yellowtail flounder and Northern windowpane flounder in the CAII S and CAII-ext areas. The scallop fishery is allocated 16% of the Georges Bank yellowtail flounder ABC, and 21% of the Northern windowpane ABC. The scallop fishery share of the US allocation of GB yellowtail is expected to be around 33 mt for the

coming FY. The Northern windowpane ACL is expected to be around 18 mt. This measure is intended to compliment other scallop measures which reduce flatfish bycatch on Georges Bank, such as prohibition on the possession of the stock, a seasonal closure from Aug. 15 – Nov. 15, and the use of a 10” twine top.

- 5) **The PDT recommends keeping portions of groundfish and habitat areas that will not be part of newly configured access areas closed for one-year. This includes part of the current Nantucket Lightship groundfish and habitat closures that are not included within the proposed NLS-West Access Area boundary, and habitat and groundfish closures in and around Closed Area II. These areas will stay closed to scalloping unless the Council takes action to open them.** The PDT is recommending that these areas remain closed in FW 29 (but revisited in 2018) because: 1) The NLS-West area have not been regularly surveyed, or may not hold large quantities of scallops at present. The CAII-N area was surveyed by SMAST in 2017, the drop camera observed zero (0) scallops over 50 stations; 2) both NLS and CAII are known to hold both yellowtail and windowpane flounder, keeping these areas closed would serve as a proactive AM to reduce flatfish bycatch; 3) delaying action on these areas may allow for additional data collection in these areas to inform how access may be structured in the future; 4) No Action for these areas keeps the Framework as streamlined as it can be at this point;

4. Stock-specific options for proactively reducing bycatch in FW29:

1. Northern Windowpane Flounder

The Scallop PDT projections of Northern windowpane flounder bycatch (46.69 - 68.08) exceed the anticipated sub-ACL (18 mt) in each specification alternative under consideration in FW29.

- a. The bycatch projections for northern windowpane do not account for the seasonal closures of Closed Area II from August 15 – November 15. Therefore, the 2018 bycatch projections may be overestimated.
- b. **The PDT recommends that the Council proactively apply the small Northern windowpane reactive AM being developed in FW29 (proactive for FY 2018 only, if CAII is open). The AM would require the use of a 5-row apron with a 1.5:1 maximum hanging ratio from November 16 – December 31 in Closed Area II. This measure is anticipated to reduce CAII AA bycatch of Northern windowpane by ~24%, and Georges Bank yellowtail bycatch by ~9% during that time.** The PDT projects that bycatch of Northern windowpane may be between 45 – 68 mt in FY2018 (depending on the alternative). The sub-ACL for this stock is anticipated to be 18 mt. The scallop fishery is estimated to have caught 114% of its sub-ACL thus far in FY 2017. If the Northern windowpane bycatch by all fisheries exceeds the overall ACL in FY 2017, the scallop fishery would be subject to a reactive AM, likely in FY 2019. Applying a reactive AM proactively in the gap year between when the AM is triggered and when it would be implemented addresses the Scallop Committee’s tasking that the PDT develop options for reducing bycatch on stocks where projected catch exceeds the anticipated sub-ACL. The PDT did note that

the projected catch of GB yellowtail and Northern windowpane may be overestimated because the seasonal closure of Closed Area II was not accounted for in the estimate.

- c. The Council modified the reactive AM trigger for the scallop fishery in Groundfish Framework 56. Currently, the scallop fishery is only subject to an AM if the overall ACL is exceeded by all fisheries. **Proactively implementing a reactive AM helps reduce the chance that there is an overall ACL overage in FY2018, which would impact multiple fisheries.**

2. Georges Bank Yellowtail Flounder

The Scallop PDT projections of Georges Bank yellowtail flounder range from 5.57 mt to 43.44 mt. In general, projections for specifications options that allocate an access area trip to Closed Area II (Scenario 1 – BASE option and Scenario 4 – Only Closed Area I opens through OHA2) exceed the anticipated sub-ACL (33 mt) in each specification alternative under consideration in FW29.

- a) The bycatch projections for Georges Bank yellowtail flounder do not account for the seasonal closures of Closed Area II from August 15 – November 15. Therefore, the 2018 bycatch projections may be overestimated.
- b) **The PDT recommendation to proactively apply the small Northern windowpane reactive AM in FY 2018 is expected to reduce catch of CAII AA GB YT flounder by ~9% in scenarios when Closed Area II is open in FY2018.** These are the only scenarios in FW29 where Georges Bank yellowtail flounder catch is projected to exceed the sub-ACL. In all other options, the projected catch is well below the sub-ACL. If the scallop fishery is not projected to catch the GB yellowtail allocation by January 15 of 2019, the uncaught portion of the sub-ACL may be transferred to the groundfish fishery for harvest during the 2018 FY.
- c) The Council modified the reactive AM trigger for the scallop fishery in Groundfish Framework 56. Currently, the scallop fishery is only subject to an AM if the overall ACL is exceeded by all fisheries. **Proactively implementing a reactive AM helps reduce the chance that there is an overall ACL overage in FY2018, which would impact multiple fisheries.**

3. Southern Windowpane Flounder

The Scallop PDT projections of Southern windowpane flounder bycatch (228.6 – 308.23) exceed the anticipated sub-ACL (158 mt) in each specification alternative under consideration in FW29. The PDT considered the following information in considering options for reducing bycatch of this stock:

- a. Southern windowpane is not overfished, and overfishing is not occurring. The stock was assessed in 2017 and considered rebuilt.

- b. The majority of Southern windowpane bycatch is projected to come from the Nantucket Lightship Extension area (Table 4). This PDT has very low confidence in the accuracy of the bycatch estimates.
 - 1. The estimate of exploitable scallop biomass in this area is highly uncertain. The scallops in this area are very patchy, with the majority of animals aggregated in very high densities in the northwest portion of the area (Figure 1). Exploitable biomass is averaged over the entire area, and does not account for the known patchiness of scallops in the NLS-ext. In 2017, survey estimates from this area that inform scallop biomass projections are highly uncertain (CV>1).
 - 2. The bycatch estimates use d/K values that are extrapolated from a GAM model that uses windowpane bycatch data from the NLS-N SAMS area in 2017. The model makes a predication about what the d/K may be in the NLS-ext given the characteristics of the area.
 - 3. Given the uncertainty around the exploitable biomass of scallops and the extrapolated d/K from the GAM model, the bycatch estimates in the NLS-Ext could be inflated by 2 or 3 times.
- c. The scallop fishery will be subject to a Southern windowpane flounder reactive AM in the spring of 2018, which is anticipated to reduce catch in the short-term.
- d. The scallop PDT is not recommending additional proactive measures (beyond maintaining closures, keeping AM implementation) to reduce catches at this time.

4. Southern New England/Mid-Atlantic Yellowtail Flounder

The Scallop PDT projections of Southern New England/Mid Atlantic yellowtail flounder range from 3.84 mt - 5.25 mt. The allocation of this stock is not based on a fixed percentage. In recent actions, the Council has set the sub-ACL at 90% of projected catch. The PDT considered the following information in considering options for reducing bycatch of this stock:

- a. The bycatch of SNE/MA yellowtail flounder is anticipated to be ~6 mt or less in all specification scenarios, which is ~8.6% of what might be a 52 mt ABC for the stock.
- b. The Groundfish PDT estimated that “Other” sub-component catch of this stock to be 16 mt in FY2018, which is nearly 30% of the US ABC at 52 mt, and 10 mt more than the scallop fishery is projected to catch.
- c. A reactive AM for Southern windowpane (5-row apron with 1.5:1 maximum hanging ratio gear restricted area west of 71° W) will be in place for the month of February 2018. This GRA is expected to reduce catches of both Southern windowpane and SNE/MA yellowtail.
- d. The scallop PDT is aware that the Council’s SSC will be reconsidering the ABC for this stock at the end of November 2017.

- e. The scallop PDT is not recommending additional proactive measures (beyond maintaining closures) to reduce catches at this time.

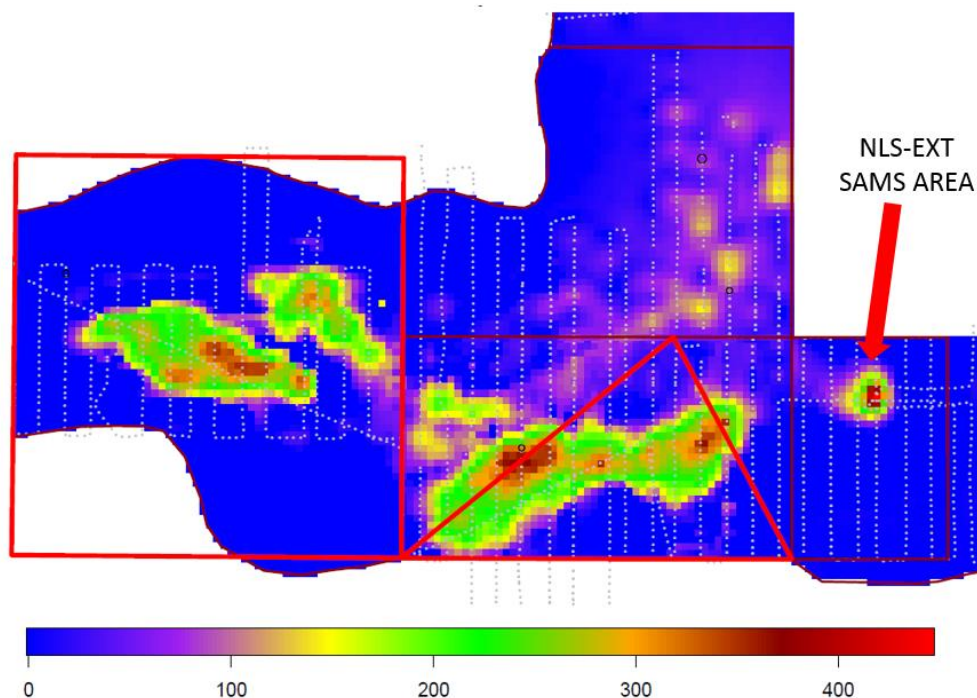
Table 3 – Yellowtail Catch Estimates by SAMS area (values in mt)

SAMS Area	SQ	BaseF0.4	NLSF0.36	NLSC1F0.295
HCS	0.01	0.01	0.01	0.01
Virginia	0.00	0.00	0.00	0.00
ETOpen	0.00	0.00	0.00	0.00
ETFlex	0.00	0.00	0.00	0.00
Dmv	0.00	0.00	0.00	0.00
NYB	0.01	0.01	0.01	0.01
Long Island	0.55	0.47	0.45	0.38
MAInshore	0.61	0.51	0.49	0.40
CAI-NA	0.00	0.00	0.00	6.98
CAI-Acc	0.00	0.00	0.00	0.00
CAII-NA	0.00	0.00	0.00	0.00
CAII-Acc	61.35	31.14	0.00	0.00
NLS-NA	0.00	0.00	0.55	0.49
NLS-AccN	0.99	0.00	0.00	0.00
NLS-AccSsh	0.08	0.19	0.19	0.19
NLS-AccSdeep	0.00	0.00	0.00	0.00
CAII-Ext	0.00	13.73	15.89	13.58
NLS-Ext	0.00	0.13	0.12	0.11
Schannel	18.51	15.97	15.38	13.10
Nflank	1.26	1.09	1.05	0.90
Sflank	3.48	2.97	2.86	2.43

Table 4 - Windowpane Catch Estimates by SAMS area (values in mt)

SAMS Area	SQ	BaseF0.4	NLSF0.36	NLSC1F0.295
HCS	0.79	1.17	0.75	0.75
Virginia	0.00	0.00	0.00	0.00
ETOpen	8.03	12.85	8.37	8.37
ETFlex	5.12	8.72	5.68	5.68
Dmv	0.06	0.00	0.00	0.00
NYB	4.59	3.89	3.74	3.16
Long Island	13.24	11.20	10.75	9.07
MAInshore	12.72	10.55	10.09	8.41
CAI-NA	0.00	0.00	0.00	10.90
CAI-Acc	0.00	0.00	0.00	0.00
CAII-NA	0.00	0.00	0.00	0.00
CAII-Acc	25.85	13.12	0.00	0.00
NLS-NA	0.00	0.00	58.04	51.49
NLS-AccN	181.72	0.00	0.00	0.00
NLS-AccSsh	10.26	23.41	23.41	23.41
NLS-AccSdeep	0.00	0.00	0.00	0.00
CAII-Ext	0.00	5.30	6.13	5.24
NLS-Ext	0.00	178.77	173.26	151.41
Schannel	26.41	22.79	21.95	18.69
Nflank	12.03	10.36	9.98	8.53
Sflank	10.50	8.97	8.63	7.33

Figure 1 - 2017 CFF HabCam survey of Nantucket Lightship. Prediction unit: millions of scallop per km2.



Framework 29 Bycatch Comparisons by Stock and SAMS Model Run

Table 5 - Summary of Northern windowpane bycatch estimates, and comparison of projection to overall ABC and scallop fishery sub-ACL values.

Scallop FW 29 Bycatch Estimates									
Scenario	SAMS Run	NWP bycatch estimate	NWP US ABC (mt)	Scallop Allocation (% of ABC)	Scallop ABC	Scallop ACL	bycatch estimate as % of ABC	bycatch estimate as % of sub-ACL	
	a	b	c	d	e	f	g	h	
							(b/c)*100	(b/f)*100	
No Action	na	44.96	92	21%	19	18	49%	250%	
Status Quo	sq	74.79	92	21%	19	18	81%	416%	
1	Base36	57.18	92	21%	19	18	62%	318%	
	Base40	60.54	92	21%	19	18	66%	336%	
	Base44	63.74	92	21%	19	18	69%	354%	
2	NLSW36	46.69	92	21%	19	18	51%	259%	
	NLSW40	50.64	92	21%	19	18	55%	281%	
3	5BOTH36	57.59	92	21%	19	18	63%	320%	
	5BOTH40	61.54	92	21%	19	18	67%	342%	
	6BOTH295	50.68	92	21%	19	18	55%	282%	
	6BOTH26	46.72	92	21%	19	18	51%	260%	
4	CA136	68.08	92	21%	19	18	74%	378%	

Table 6 - Summary of Southern windowpane bycatch estimates, and comparison of projection to overall ABC and scallop fishery sub-ACL values

Scallop FW 29 Bycatch Estimates									
Scenario	SAMS Run	SWP bycatch estimate	SWP US ABC (mt)	Scallop Allocation (% of ABC)	Scallop ABC	Scallop ACL	bycatch estimate as % of ABC	bycatch estimate as % of sub-ACL	
	a	b	c	d	e	f	g	h	
							(b/c)*100	(b/f)*100	
No Action	na	33.73	473	36%	170	158	7%	21%	
Status Quo	sq	236.53	473	36%	170	158	50%	150%	
1	Base36	236.53	473	36%	170	158	50%	150%	
	Base40	250.57	473	36%	170	158	53%	159%	
	Base44	263.5	473	36%	170	158	56%	167%	
2	NLSW36	294.1	473	36%	170	158	62%	186%	
	NLSW40	308.23	473	36%	170	158	65%	195%	
3	5BOTH36	264.14	473	36%	170	158	56%	167%	
	5BOTH40	278.27	473	36%	170	158	59%	176%	
	6BOTH295	261.74	473	36%	170	158	55%	166%	
	6BOTH26	246.34	473	36%	170	158	52%	156%	
4	CA136	228.6	473	36%	170	158	48%	145%	

Table 7 - Summary of GB yellowtail bycatch estimates, and comparison of projection to overall ABC and scallop fishery sub-ACL values

Scallop FW 29 Bycatch Estimates									
Scenario	SAMS Run	GBYT bycatch estimate	GBYT US ABC (mt)	Scallop Allocation (% of ABC)	Scallop ABC	Scallop ACL	bycatch estimate as % of ABC	bycatch estimate as % of sub-ACL	
	a	b	c	d	e	f	g	h	
							(b/c)*100	(b/f)*100	
No Action	na	6.06	213	16%	34	33	3%	18%	
Status Quo	sq	67.95	213	16%	34	33	32%	206%	
1	Base36	36.46	213	16%	34	33	17%	110%	
	Base40	36.92	213	16%	34	33	17%	112%	
	Base44	37.36	213	16%	34	33	18%	113%	
2	NLSW36	5.57	213	16%	34	33	3%	17%	
	NLSW40	6.04	213	16%	34	33	3%	18%	
3	5BOTH36	12.55	213	16%	34	33	6%	38%	
	5BOTH40	13.02	213	16%	34	33	6%	39%	
	6BOTH295	11.72	213	16%	34	33	6%	36%	
	6BOTH26	11.25	213	16%	34	33	5%	34%	
4	CA136	43.44	213	16%	34	33	20%	132%	

Table 8 - Summary of Southern New England yellowtail bycatch estimates, with bycatch projection as a percentage of the overall ABC

Scallop FW 29 Bycatch Estimates					
Scenario	SAMS Run	SNEYT bycatch estimate	SNEYT US ABC (mt)	bycatch estimate as % of ABC	90% of SNEYT estimate
	a	b	c	g	h
				(b/c)*100	b*0.90
No Action	na	4.47	52	9%	4.02
Status Quo	sq	5.96	52	11%	5.36
1	Base36	4.16	52	8%	3.74
	Base40	4.51	52	9%	4.06
	Base44	4.84	52	9%	4.36
2	NLSW36	4.89	52	9%	4.40
	NLSW40	5.25	52	10%	4.73
3	5BOTH36	4.64	52	9%	4.18
	5BOTH40	5	52	10%	4.50
	6BOTH295	4.2	52	8%	3.78
	6BOTH26	3.84	52	7%	3.46
4	CA136	4.15	52	8%	3.74