



New England Fishery Management Council

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MEMORANDUM

DATE: November 28, 2022
TO: Groundfish PDT
FROM: Scallop PDT
SUBJECT: **Scallop Fishery Bycatch Outlook for FY2023**

This memo provides the Groundfish PDT with projected scallop fishery catch estimates for the four flatfish stocks for which the scallop fishery is allocated sub-annual catch limits (sub-ACLs): Georges Bank (GB) yellowtail, Southern New England/Mid-Atlantic (SNE/MA) yellowtail, northern windowpane, and southern windowpane. The Scallop PDT met via conference call on November 16, 2022 and November 18, 2022 to review bycatch projections and provided input to this memo through correspondence.

Bycatch projections of GB yellowtail, SNE/MA yellowtail, northern windowpane, and southern windowpane were calculated for the specifications alternatives being developed in Framework 36 (Table 1). Given the uncertainty in these forecasts, the Scallop PDT is presenting bycatch estimates for FY2023 only. The PDT notes that these bycatch estimates will be updated annually as part of the specifications process. Bycatch forecasts are based on modeled fishing behavior and landings projections, which increases the uncertainty of these estimates.

Framework 36 Overview:

Framework 36 (FW36) will set fishery allocations for fishing year 2023 (FY2023) and FY2024 (default). There are three spatial management alternatives being considered in FW36 (in addition to No Action; Map 1, Map 2, Map 3). All three FW36 alternatives allocate two access area trips to Area II (i.e., formerly referred to as Closed Area II), with options for a 10,000-pound trip limit (20,000-pound allocation per vessel total), a 12,000-pound trip limit (24,000-pound allocation per vessel total), and a 14,000-pound trip limit (28,000-pound allocation per vessel total). All alternatives continue closures in the New York Bight, Nantucket Lightship West, and establish new closures of Area I (i.e., formerly referred to as Closed Area I) and the Elephant Trunk. All closures are in response to recent recruitment in these areas, with the goal of optimizing yield per recruit through the rotational management program. There are two open area days-at-sea (DAS) options for the limited access component being considered with each alternative: 22 DAS and 24 DAS. The Council is also considering a range of specifications for the Northern Gulf of Maine management area, which is within the northern windowpane stock area. Overall landings are expected to decline from around 34 million pounds projected for FY2022 to approximately 23-25 million pounds projected for FY2023, depending on the Council's preferred alternative. The decline in projected landings is consistent with a continued downward trend in scallop biomass, with estimated biomass being at its lowest point since 1999. The measures being considered in

FW36 represent a decline in access area fishing in terms of the number of trips and trip limits from FW34. The Council has set DAS at 24 for the last five fishing years, meaning that open area effort would be expected to be consistent with, or below, recent levels. As noted in the discussion below, the PDT anticipates that fishing effort in 2023 will be distributed similarly to FY 2022, with more effort on Georges Bank than in the Mid-Atlantic.

Bycatch Projection Methods:

First, a discard to kept (D:K) ratio was estimated from available observed data for each Scallop Area Management Simulator (SAMS) area (Map 4, Map 5). The PDT used data from observed trips between July 2021 and June 2022, except for areas that had not been fished recently, such as Area II East. For Area II, East observer data were used from the most recent 12-month period available (i.e., FY2021). Second, for each stratum (i.e., SAMS area), the baseline D:K ratio was projected forward using changes in exploitable scallop biomass (B):

$$D:K_{proj} = D:K_{obs} \left(\frac{B_{obs}}{B_{proj}} \right)$$

Bycatch was then estimated from the projected catch:

$$bycatch = (D:K_{proj}) * Land_{proj}$$

By including changes in exploitable biomass for each SAMS area, the forecasting approach attempts to more accurately characterize bycatch based on availability of scallops in the coming fishing year versus assuming that D:K ratios observed in the past will reflect future bycatch rates. While the PDT feels that this approach is preferable to the application of just the observed D:K for future landings, it does introduce additional uncertainty. The PDT also notes that the projection method differs from the catch accounting method used by NMFS to track in-season bycatch.

Bycatch Estimates: Bycatch projections relative to the sub-ACL vary for each stock. As shown in Table 1, the projections for southern windowpane are below the anticipated sub-ACL for this stock by roughly 88 mt (i.e., roughly three times less than sub-ACL). The projections for SNE/MA yellowtail are around 3 mt for all options, slightly greater than the 2 mt anticipated sub-ACL. The GB yellowtail projections are about double the anticipated sub-ACL of 16.5 mt and the northern windowpane projections are about 3 to 4 times greater than the anticipated sub-ACL of 31 mt.

The Council is also considering a range of specifications for the Northern Gulf of Maine management area, which is within the northern windowpane stock area. Bycatch projections have not been made for this area in the past due to a lack of observer coverage; however, starting in FY2022, a call-in requirement was implemented for vessels fishing directed trips in the NGOM. Available observer data from the NGOM (n=37 trips) were used to estimate northern windowpane bycatch for FY2023. Note that northern windowpane bycatch projections for the range of NGOM options are less than 0.5 mt, or under 0.005% of the total bycatch projection for this stock.

PDT Discussion: Bycatch estimates are presented in Table 1. The projections are forecasts (with error) and should not be interpreted as precise estimates. The PDT feels that stratifying bycatch estimates by SAMS area is appropriate because projected scallop landings are stratified at this scale and observer data shows differences in bycatch within management units like access areas. Realized bycatch may be higher or lower than forecasted, which is supported by previous experiences where past estimates have both over- and under-estimated realized bycatch.

In FY2023 the majority of open area and access area fishing effort is expected to occur on Georges Bank. This is based on several factors: 1) access area trips are only being considered for Area II, which is on eastern Georges Bank; 2) open areas of eastern Georges Bank hold the majority of open area exploitable biomass and are expected to have higher catch rates than open areas elsewhere in the resource; and 3) lower anticipated catch rates in the Mid-Atlantic region as well as area closures being considered in Framework 36 for the New York Bight and Elephant Trunk will likely push effort that would have occurred in these areas onto Georges Bank.

Open Bottom Fishing: The projection model forecasts that vessels will likely target higher density areas of eastern Georges Bank, specifically the Southern Flank (SF) and Northern Flank (NF) SAMS areas (Map 4) while on open bottom trips. Both of these areas fall within the Georges Bank yellowtail and northern windowpane stock areas. There is less certainty in the bycatch projections for open areas because actual fishing behavior may not reflect predictions from the SAMS model. For example, if there is more open bottom fishing in the Mid-Atlantic than expected, bycatch of southern windowpane flounder may be higher than forecasted and northern windowpane bycatch may be lower. The projections are based on forecasts of scallop biomass and fishing behavior and also are subject to error associated with the flatfish bycatch data used in the bycatch calculation; the PDT notes that these variables could result in error as high as 50% (i.e., bycatch projections could be 50% higher or lower than estimated).

As shown in Table 2, roughly 70% of FY2023 northern windowpane bycatch is attributed to open area fishing on eastern Georges Bank (i.e., SF and NF SAMS areas) and in the Great South Channel (i.e., GSC SAMS area). This is consistent with the spatial distribution of open area effort over the past year given that the majority of open area biomass continues to be concentrated on Georges Bank. About 21% of northern windowpane bycatch is projected to come from the GSC SAMS area, which falls in both the northern windowpane and southern windowpane stock areas. Based on assumptions of fishing behavior in FY2023, the projections assume that 80% of windowpane bycatch in the GSC comes from the northern stock area whereas 20% is assumed to come from the southern stock area. If assumptions of open area fishing in the GSC are incorrect, for example if more fishing occurs in the southern stock area than expected, northern windowpane bycatch could be lower than projected and southern windowpane bycatch could be higher.

Access Area Fishing: Bycatch projections are also driven by assumptions of where fishing will occur within an access area. In the case of Area II, observed D:K ratios suggest that GB yellowtail bycatch tends to be higher in the eastern portion of the access area (i.e., CAII-East SAMS area) and that northern windowpane bycatch tends to be higher in the western portion of the access area (CAII-Southwest). While the FY2023 projections assume that fishing effort will be distributed evenly across the three SAMS areas that make up Area II (i.e., CAII-Southwest, CAII-East, CAII-Extension), if realized effort is focused more in the eastern part of Area II

(currently closed), GB yellowtail bycatch could be greater than projected and northern windowpane bycatch could be less than projected. In a scenario where fishing is focused more in the western part of Area II, northern windowpane bycatch could be higher than projected whereas GB yellowtail bycatch could be lower than projected.

Recent Projections and Flatfish Accountability Measures: The northern windowpane bycatch projections for FY2023 exceed the anticipated scallop fishery sub-ACL and are similar to the PDT's bycatch projections for FY2022 (106 mt – 126 mt in 2023 vs. 86 mt – 115 mt in 2022). . Due to recent overages, the reactive large accountability measure for Georges Bank was triggered for FY2022 and is anticipated to be implemented for FY2023 as well. This means the gear restriction was required for all fishing occurring in Area II for the entirety of FY2022 and is expected to be required again in FY2023. The modified gear is expected to have a positive effect on bycatch of both Georges Bank yellowtail and northern windowpane flounder.

The reactive AM gear requirement has been in use for the first time since the start of FY2022 and is anticipated to be required for the duration of FY2023. Experimental work on the modified gear suggested that windowpane bycatch could be reduced by roughly 46% and yellowtail bycatch could be reduced by roughly 34%. Since observer data used to project FY2023 bycatch are from July 2021 to June 2022, observer data used for the projections are mostly representative of fishing in Area II without the modified gear. Thus, it is possible that the projections presented in Table 1 could be as much as 46% lower for windowpane and 34% lower for yellowtail in Area II where the modified gear is required. Table 2 shows the breakdown of projected bycatch by SAMS area for Alternative 3 Option 2 (two 12,000-pound trips with 24 DAS), and a separate breakdown that adjusts the Area II projections based on the bycatch savings expected by using the AM gear modification (i.e., 46% reduction for windowpane, 34% reduction for yellowtail). As shown in the table, adjusting bycatch by the gear reduction values results in an overall reduction in northern windowpane bycatch by roughly 14% and a reduction of roughly 30% for GB yellowtail.

FY2023 Outlook: Bycatch forecasts for both Georges Bank yellowtail and northern windowpane are expected to exceed the scallop fishery sub-ACLs for these stocks. While a reactive AM is expected to help reduce bycatch in Area II, as noted above, the majority of the northern windowpane bycatch is expected to come from open bottom fishing on Georges Bank. On November 18, 2022, the Scallop PDT discussed ways that the fishery could reduce the bycatch of northern windowpane through the use of gear restricted areas in open bottom areas on Georges Bank in Framework 36. Staff will discuss these options with the Scallop AP and Committee on December 1, 2022.

Projections for the other stocks allocated a sub-ACL are at or below the anticipated sub-ACLs for FY2023 (Table 3). The southern windowpane projections are notably lower compared to projections from the past several years. This is a result of a continued shift of effort from the Mid-Atlantic region (i.e., out of the southern windowpane stock area) to Georges Bank.

Table 1 - Overview of FY2023 projected scallop fishery bycatch estimates for the range of alternatives being considered in FW36, including the anticipated FY2023 scallop sub-ACL for each stock. Projections are presented as an average for each alternative (i.e., middle point of each DAS option).

Alternative	Scenario		GB YT	SNE/MA YT	GOM/GB WP	SNE/MA WP
<i>Anticipated 2023 sub-ACL</i>		GB Closure	<i>16.5 mt</i>	<i>2 mt</i>	<i>31 mt</i>	<i>129 mt</i>
Alternative 2	2 trips to Area II AA at 10,000 per trip (20K total) 22 or 24 DAS New York Bight, Elephant Trunk, Area I, NLS-West Closed	Area II seasonal closure (Aug 15-Nov 15)	32	3	106-112	38-41
Alternative 3	2 trips to Area II AA at 12,000 per trip (24K total) 22 or 24 DAS New York Bight, Elephant Trunk, Area I, NLS-West Closed	Area II seasonal closure (Aug 15-Nov 15)	38	3	112-119	38-41
Alternative 4	2 trips to Area II AA at 14,000 per trip (28K total) 22 or 24 DAS New York Bight, Elephant Trunk, Area I, NLS-West Closed	Area II seasonal closure (Aug 15-Nov 15)	45	3	119-126	38-41

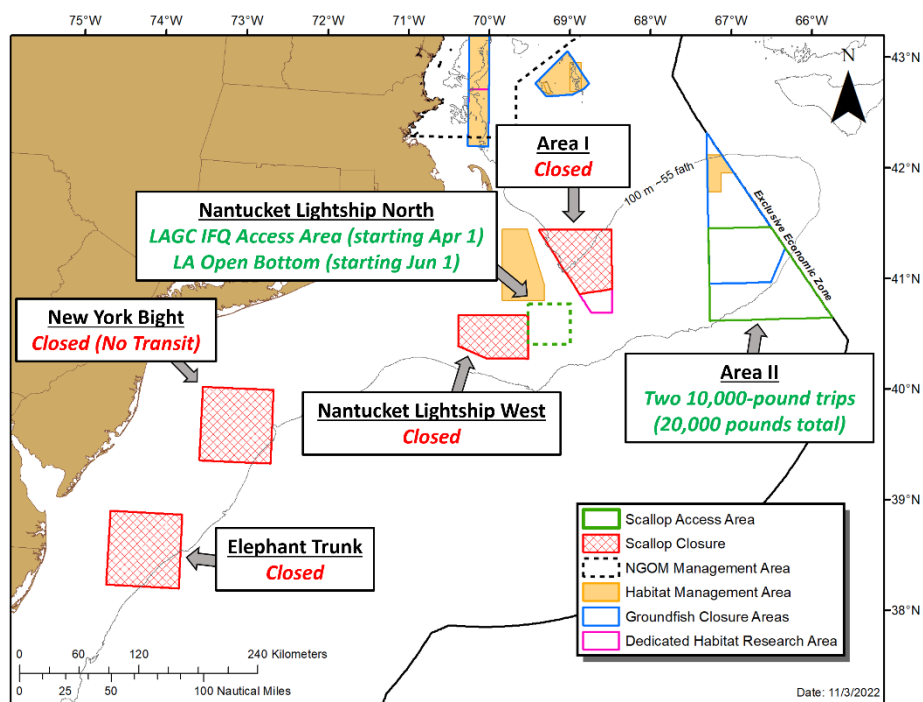
Table 2 - Estimated FY2023 bycatch for GB yellowtail and northern windowpane from Alternative 3 with 24 DAS, by SAMS area (mt). Bycatch values are also shown with reduction parameters applied from fishing the AM gear modification in Area II (i.e., 46% reduction for windowpane, 34% reduction for yellowtail).

	CA2-SE	CA2-SW	CA2-Ext	GSC	NF	SF	Total
<i>Georges Bank Yellowtail Flounder</i>							
2023	30	3	2	1	2	1	38
With AM gear (34% reduction in Area II)	20	2	1	1	2	1	27
<i>Northern Windowpane Flounder</i>							
2023	12	10	15	25	26	31	119
With AM gear (46% reduction in Area II)	7	5	8	25	26	31	102

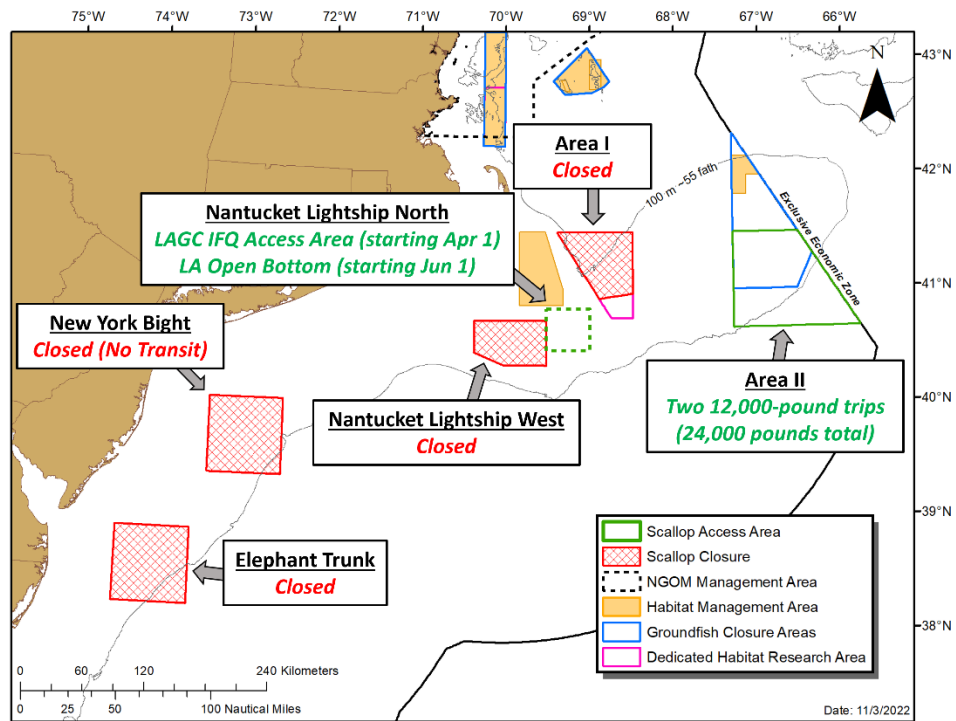
Table 3 – Estimated FY2023 bycatch for SNE yellowtail and southern windowpane from Alternative 3, with 24 DAS, by SAMS area (mt).

	HCS	ET	DMV	NYB	LI	Inshore	NLSN	NLSS	GSC	Total
<i>Southern New England/ Mid-Atlantic Yellowtail</i>										
2023	0	0	0	0	0	0	0	0	3	3
<i>Southern Windowpane Flounder</i>										
2023	0	0	0	2	3	1	24	5	6	41

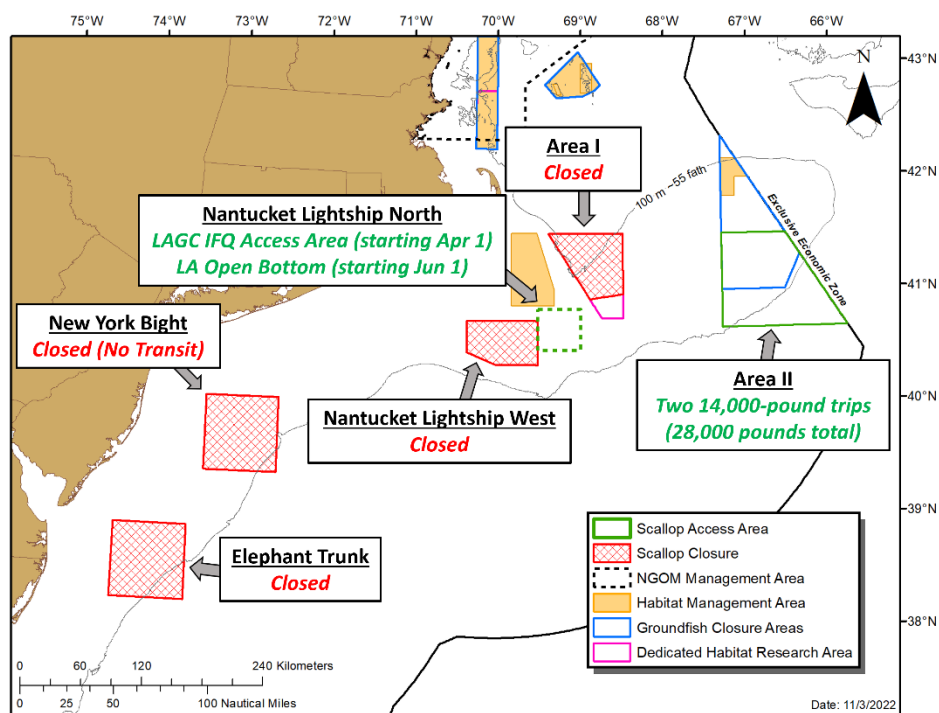
Map 1 – Potential FY2022 spatial management under Alternative 4.3.2 in Framework 36.



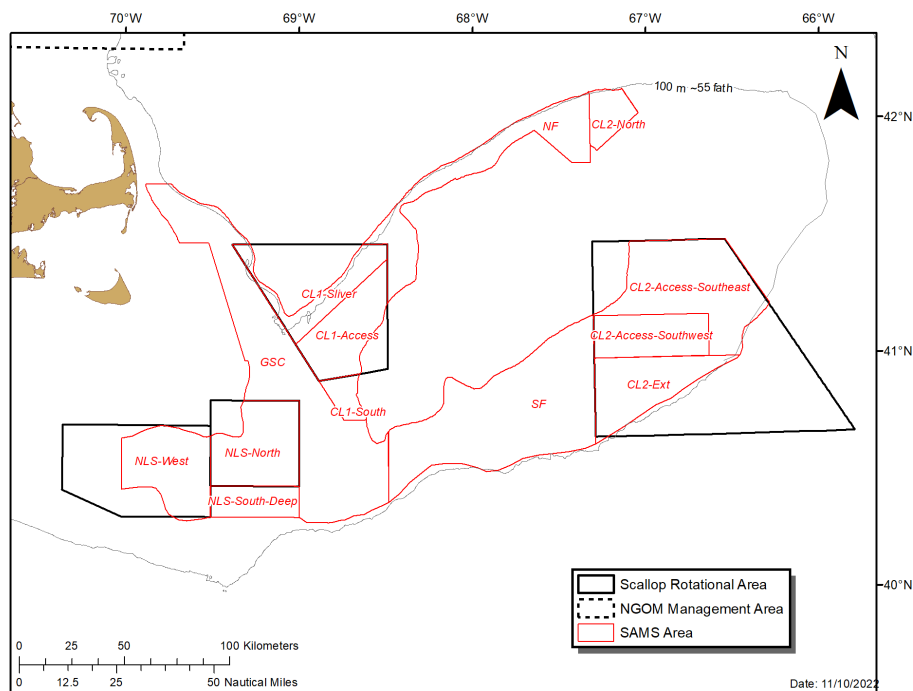
Map 2 – Potential FY2022 spatial management under Alternative 4.3.3 of Framework 36.



Map 3 – Potential FY2022 spatial management under Alternative 4.3.4 of Framework 36.



Map 4 – The 2022 Georges Bank SAMS areas used for scallop and flatfish bycatch projections in FW36 relative to anticipated scallop rotational area boundaries for FY2023.



Map 5 – The 2022 Mid-Atlantic SAMS areas used for scallop and flatfish bycatch projections in FW36.

