New England Fishery Management Council
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MEMORANDUM VERSION 2

DATE: April 3, 2014

TO: Groundfish Oversight Committee (GF OSC)

FROM: Groundfish Plan Development Team (GF PDT)

SUBJECT: Groundfish Framework Adjustment 52, to revise windowpane flounder accountability measures

1. Activity

The Groundfish PDT held two conference calls on March 4th and March 31st and one in person meeting on March 18th, 2014 to discuss Framework Adjustment 52 (FW 52) and review the analysis completed. To date, the PDT has focused on summarizing background information on recent windowpane flounder catches and discards, examining additional information from trawl surveys, and providing ideas for potential revisions to the current AMs.

2. Background

The Council initiated FW 52 at its February 2014 meeting. The purpose of FW52 is to revise accountability measures (AMs) for the commercial groundfish fishery for southern and northern windowpane flounder stocks. The current AMs were triggered for FY 2014 due to overages of the overall annual catch limits (ACLs) in FY 2012 for both windowpane stocks. The Council requested that any revision to the current AMs be applied retroactive to FY 2014, or any overages that occurred prior to FY 2014.

The Council expressed concern that the current gear restricted area AMs may not effectively prevent overages, and could negatively impact the groundfish fishery, in particular due to considerable economic losses in targeted flatfish fisheries (e.g., winter flounder and yellowtail flounder fisheries). The Council also discussed whether the current status of the stocks should be considered when determining if AMs should be implemented. Any revisions to the AMs for windowpane flounder would be intended to mitigate overages that have already occurred, better ensure that additional overages do not occur in FY 2014 and beyond, and help minimize economic impacts of the AMs on the commercial groundfish fishery.

3. Current Management System

Neither windowpane flounder stock is allocated to groundfish sectors (i.e., non-allocated stocks), and possession is prohibited. Because the stocks are not allocated to sectors, the AMs apply to the entire commercial groundfish fishery (sector and common pool vessels), and sectors may not request an exemption from these AMs. For northern windowpane flounder, no other fishery

receives an allocation of this stock. As a result, the commercial groundfish fishery is 100% accountable for any overages of the overall ACL, regardless of what fishery caused the overage. For FY 2013 and beyond, the scallop fishery and the "other" sub-component receive an allocation of southern windowpane flounder, and thus, the AMs for southern windowpane are only triggered for a fishery if it exceeds its sub-ACL, and the overall ACL is also exceeded.

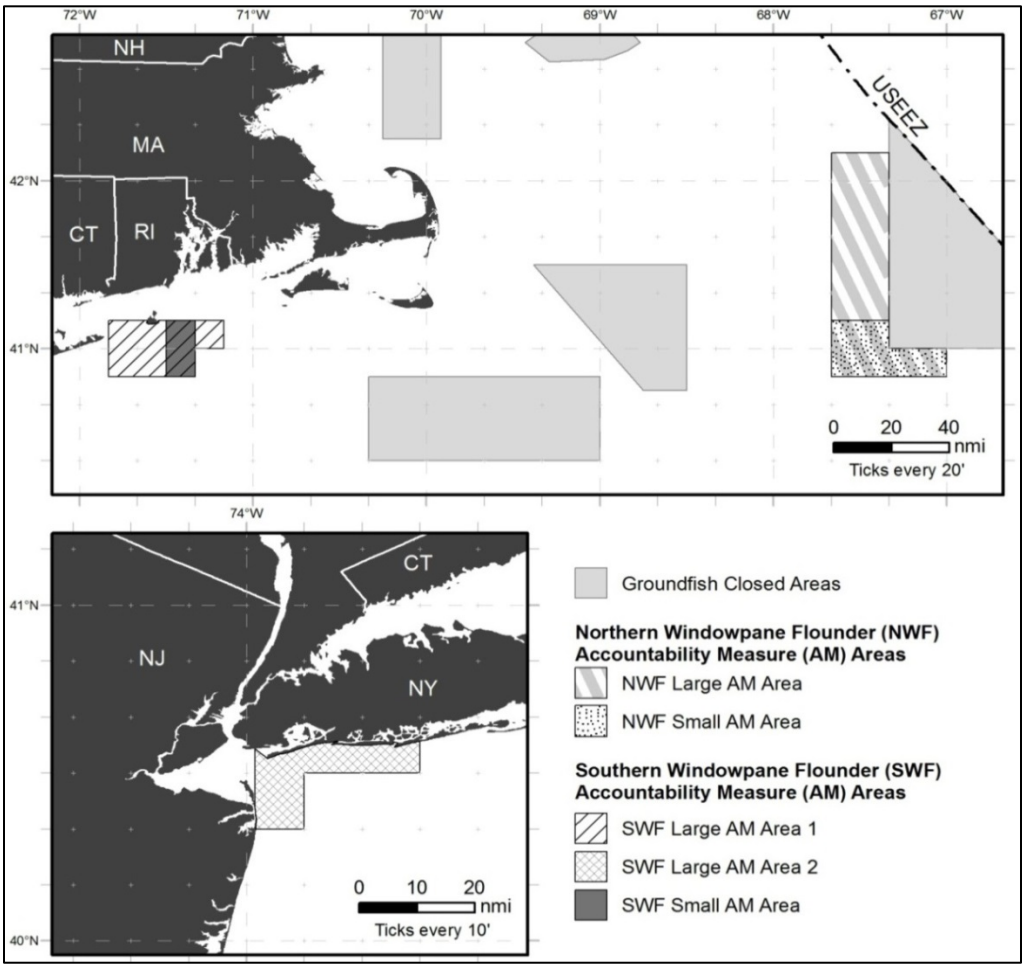
Groundfish Fishery AMs- The groundfish fishery AM for either stock of windowpane is implemented if the total ACL is exceeded by more than the management uncertainty buffer (which is approximately 5%), and in the case of southern windowpane, if the groundfish fishery also exceeds its sub-ACL.

Common pool and sector vessels fishing on a groundfish trip with trawl gear are required to use selective trawl gear to minimize catch of flatfish (e.g., separator trawl, Ruhle trawl, mini-Ruhle trawl, or rope separator trawl) when fishing in the AM areas (Figure 1). Only the small AM area is implemented if the ACL overage is less than 20%, and the large AM areas are implemented if the ACL overage is more than 20%. The AM does not apply to longline or gillnet gear since these gears comprise such a small amount of the total catch of windowpane flounder.

The AM is only implemented at the start of the fishing year, and never inseason. Inseason catch information is not readily available for state or non-groundfish fisheries, so a final ACL determination cannot typically be made until after the fishing year ends. The AM is implemented:

- At the start of Year 2 if, based on reliable data, NMFS determined inseason during Year 1 that the total ACL was exceeded; or
- At the start of Year 3, if final catch estimates after the end of Year 1, indicate that the total ACL was exceeded.

Figure 1 - Northern and southern windowpane flounder AM areas.



4. FY 2012 Windowpane Flounder Catches

The ACLs for both windowpane flounder stocks were exceeded in FY 2012 thus triggering the AMs. The northern windowpane flounder catch limit was exceeded by 28%, and the southern windowpane flounder catch limit was exceeded by 36% (Table 1). Below additional detail on the non-groundfish fisheries catches for FY 2012 is also provided (Table 2).

Table 1 - FY 2012 windowpane flounder catches by the groundfish fishery and other fisheries.

Stock	**OFL (mt)**	**ABC (mt)**	**Total ACL (mt)**	Catch (mt)				% of Catch Limit Caught
				Total	Groundfish Fishery	State Waters	Non-Groundfish Fisheries	
Northern windowpane flounder	**230**	**173**	**163**	209	130	2	77	128%
Southern windowpane flounder	**515**	**386**	**381**	521	107	34	380	136%

Table 2 - FY 2012 windowpane flounder catch detail for non-groundfish fisheries.

Stock	Scallop	Fluke	Scup	Small-Mesh Fisheries (squid/whiting)	Unknown
Northern windowpane flounder	75.7	0.0	0.0	1.0	0.0
Southern windowpane flounder	125.8	75.9	65.8	28.0	80.4

5. Preliminary FY 2013 Windowpane Flounder Catches

Preliminary FY 2013 catch estimates for both stocks of windowpane flounder are presented in Table 3 based on data reported through March 19, 2014. Inseason catch estimates are not available for state waters or the other sub-component. The preliminary FY 2013 catch estimate for northern windowpane flounder (227 mt), which only includes commercial groundfish catches, exceeds both the FY 2013 ABC (151 mt), and the FY 2013 OFL (202 mt) (Table 4).

Table 3 - Preliminary FY 2013 windowpane flounder catches, data as reported 3/19/2014.

Stock		Total	Groundfish	Scallop	State Waters	Other sub-component
Northern windowpane	Catch Limit	144	98	NA	2	44
	Preliminary FY 2013 Catch	227	227	NA	NA	NA
Southern windowpane	Catch Limit	527	102	183	55	186
	Preliminary FY 2013 Catch	215	106	104	NA	NA

6. 2014 Windowpane AMs for the Groundfish Fishery

Due to the FY 2012 overages for both windowpane stocks, the respective AMs will be implemented for FY 2014. In addition because the overages for both stocks was greater than 20% of the ACL, both the large AM areas will be triggered for northern and southern windowpane (Figure 1). The AM will only apply to commercial groundfish vessels. Allocations for the scallop fishery and the other sub-component were not made until FY 2013, so groundfish vessels will be held 100% accountable for the FY 2012 overage, regardless of what fisheries contributed to the overage.

7. OFLs, ABCs, and ACLs for FY 2013-2015

The ABCs for FY 2013-FY 2015 for both stocks of windowpane flounder were held constant (Table 4). The SSC concluded that the index-based assessment projections for both windowpane flounder stocks are too unreliable for determining ABCs, and therefore, were not used to determine specifications for the windowpane flounder stocks. Instead, OFLs and ABCs were estimated from the most recent three year average of biomass from the fall survey. The OFL was calculated as the F_{MSY} proxy applied to the most recent biomass estimate. The ABC was

calculated as 75% of F_{MSY} applied to the most recent biomass estimate. These specifications were implemented through FW 50 (see Appendix III to FW 50 for additional details).

Table 4 - OFLs, ABCs, and ACLs for FY 2013, FY 2014 and FY 2015 for both windowpane flounder stocks.

Stock	Year	OFL	ABC	Total ACL	Groundfish	Scallop	State Waters	Other sub-component
Northern windowpane	2013 2014 2015	202	151	144	98	NA	2	44
Southern windowpane	2013 2014 2015	730	548	527	102	183	55	186

Recent Assessment - Both stock assessments for the Northern (Gulf of Maine – Georges Bank) and Southern New England windowpane stocks are index based assessments using the AIM model.

However, the SSC concluded that the AIM model projections for both windowpane flounder stocks are too unreliable for determining ABCs. Subsequently, the windowpane flounder ABCs were estimated using a three year average of the fall biomass index multiplied by 75%F_{MSY}. This estimate was held constant for the three years specified (FY 2012-FY 2014).

In addition, fall windowpane flounder R/V Bigelow conversion coefficients were estimated at 1.901 for biomass and 2.044 for abundance. While, spring conversion coefficients were estimated at 3.311 for abundance and 3.069 for biomass. The R/V Bigelow survey indices were converted to R/V Albatross units.

8. Status of the Stocks

Both windowpane flounder stocks are assessed using a lagging 3-year moving average of the NEFSC fall survey biomass index. These assessments are based on data from fall NEFSC bottom-trawl surveys because the fall surveys demonstrate a stronger relationship with the fishery catch time series compared to the spring surveys (see GARM III). The stock assessments for windowpane flounder were most recently updated in 2012, and the assessment had a terminal year of 2010. A summary of the 2012 assessment results for both stocks is below. The assessments for both stocks are tentatively scheduled to be updated in early 2015, though it is unclear if the results of these updates will be available in time for the start of the 2015 fishing year, which begins on May 1, 2015.

Northern (GOM/GB) Windowpane Flounder- Biomass indices for this stock have fluctuated above and below the time series median as fishing mortality rates have fluctuated below and above the point where the stock could replenish itself. Biomass indices increased to levels at or slightly above the median during 1998-2003, but then fell below the median from 2004-2010. Biomass was 29% of B_{MSY} in 2010 (NEFSC 2012). According to the 2012 assessment update, the stock was overfished and overfishing was occurring in 2010.

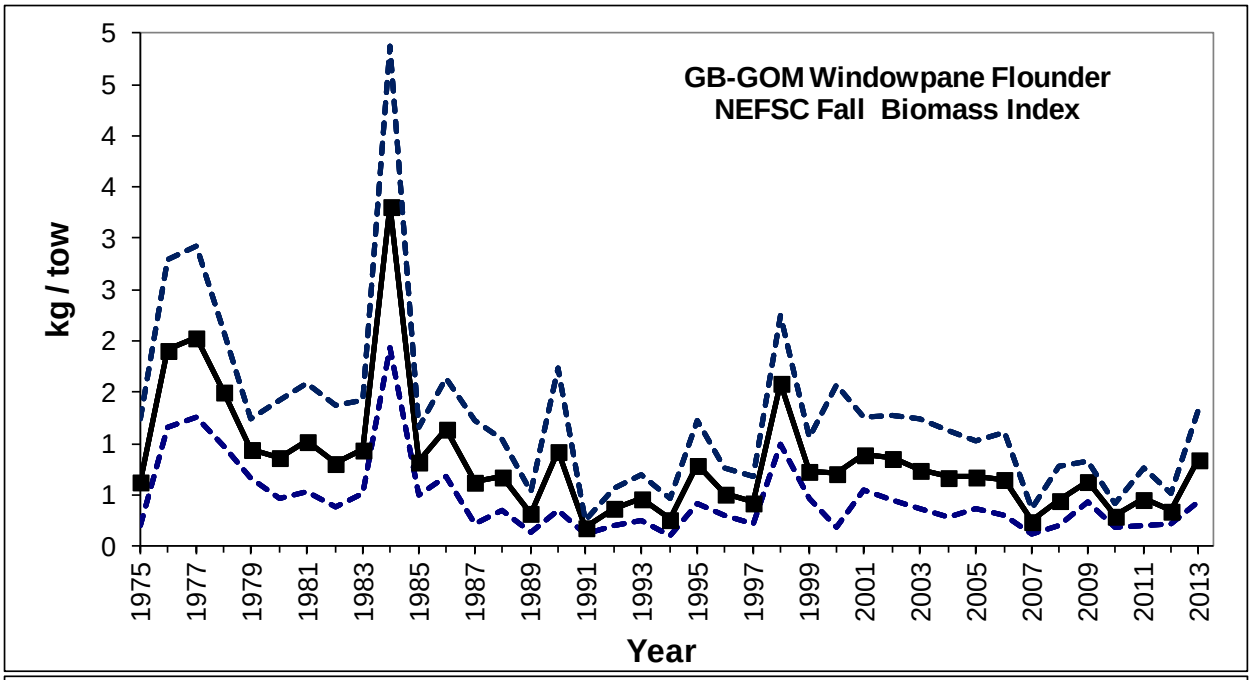
Southern (SNE/MAB) Windowpane Flounder- In 2009 and 2010, biomass indices for this stock were above the median, and the 2010 biomass was well above the B_{MSY} proxy (146%). According to the 2012 assessment update, the stock is not overfished and overfishing was not occurring (NEFSC 2012). As a result, NOAA Fisheries declared this stock rebuilt in May 2012.

9. Recent Survey Catches and Distribution

Survey Trends- The converted spring survey indices show a larger shift in the index for both stocks when the R/V Bigelow series began in 2009 (Figures 2-5). It is not clear if this is a reflection of increases in biomass or due to uncertainty with the calibration factors. The fall northern windowpane flounder stock biomass index increased in 2010 but the 2010-2011 indices were relatively low in comparison to previous years (Figures 2-3). Increases in the biomass indices from 2009-2013 relative to the mid-2000s were seen for the southern windowpane flounder stock (Figures 4-5).

Distribution- In general, windowpane founder are widely distributed across the shallower potions of Georges Bank and inshore waters of the Mid-Atlantic and Southern New England (Figure 7). Windowpane flounder are also more widely distributed into relatively deeper water in the spring survey in comparison to the fall survey.

Figure 2- Fall survey biomass index, stratified mean weight per tow (top), and survey abundance index, numbers per tow (bottom) for Northern (Gulf of Maine – Georges Bank) windowpane flounder. R/V Albatross trawl door, gear, and vessel conversion factors applied as appropriate. R/V Bigelow abundance and weight conversion factors applied from 2009-2013. Bootstrap 90% confidence intervals are also shown. Data Source: NEFSC fall bottom-trawl surveys 1975-2013.



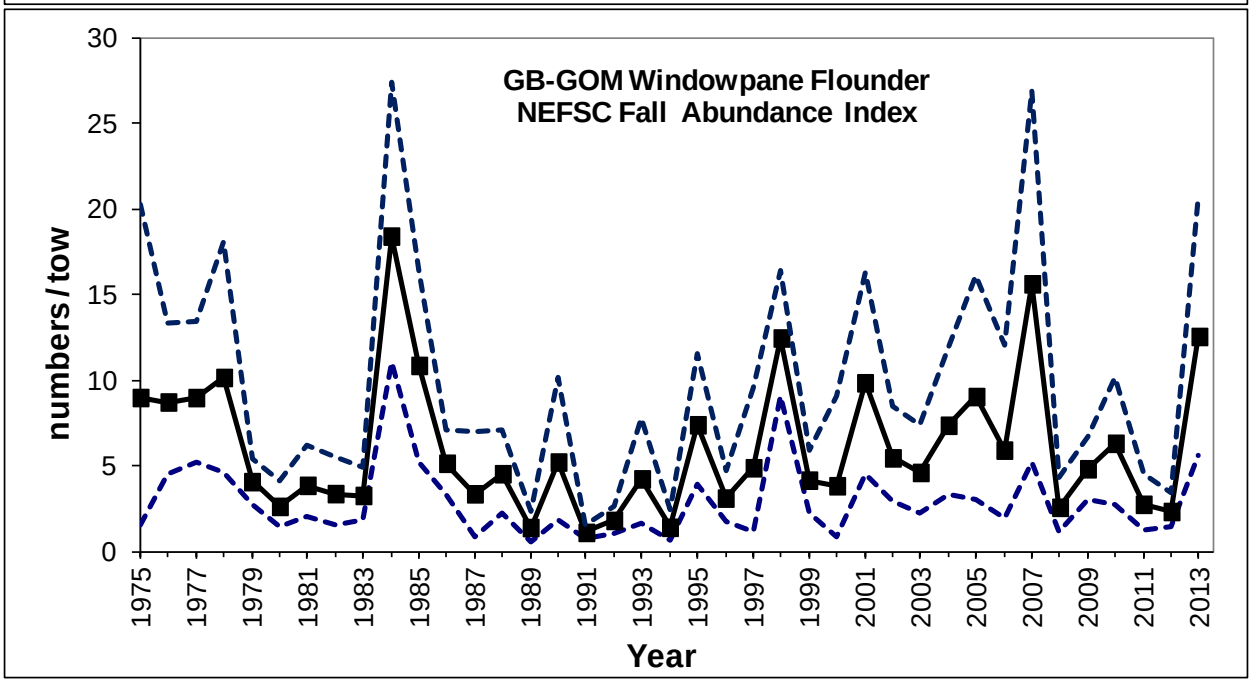


Figure 3 - Spring survey biomass index, stratified mean weight per tow (top), and survey abundance index, numbers per tow (bottom) for Northern (Gulf of Maine – Georges Bank) windowpane flounder. R/V Albatross trawl door, gear, and vessel conversion factors applied as appropriate. R/V Bigelow abundance and weight conversion factors applied from 2009-2013. Bootstrap 90% confidence intervals are also shown. Data Source: NEFSC spring bottom-trawl surveys 1975-2013.

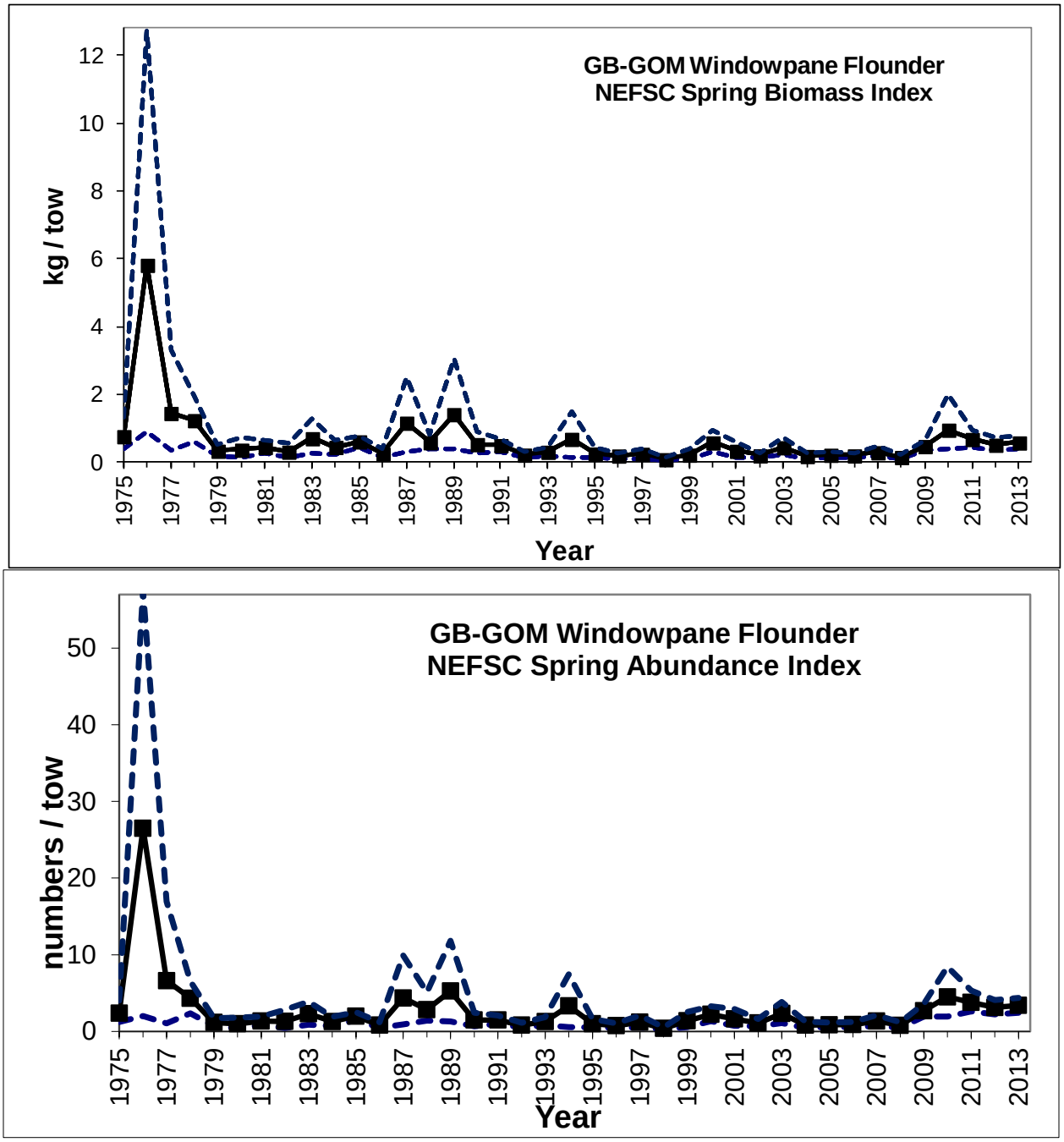


Figure 4 - Fall survey biomass index, stratified mean weight per tow (top), and survey abundance index, numbers per tow (bottom) for Southern (SNE) windowpane flounder. R/V Albatross trawl door, gear, and vessel conversion factors applied as appropriate. R/V Bigelow abundance and weight conversion factors applied from 2009-2013. Bootstrap 90% confidence intervals are also shown. Data Source: NEFSC fall bottom-trawl surveys 1975-2013.

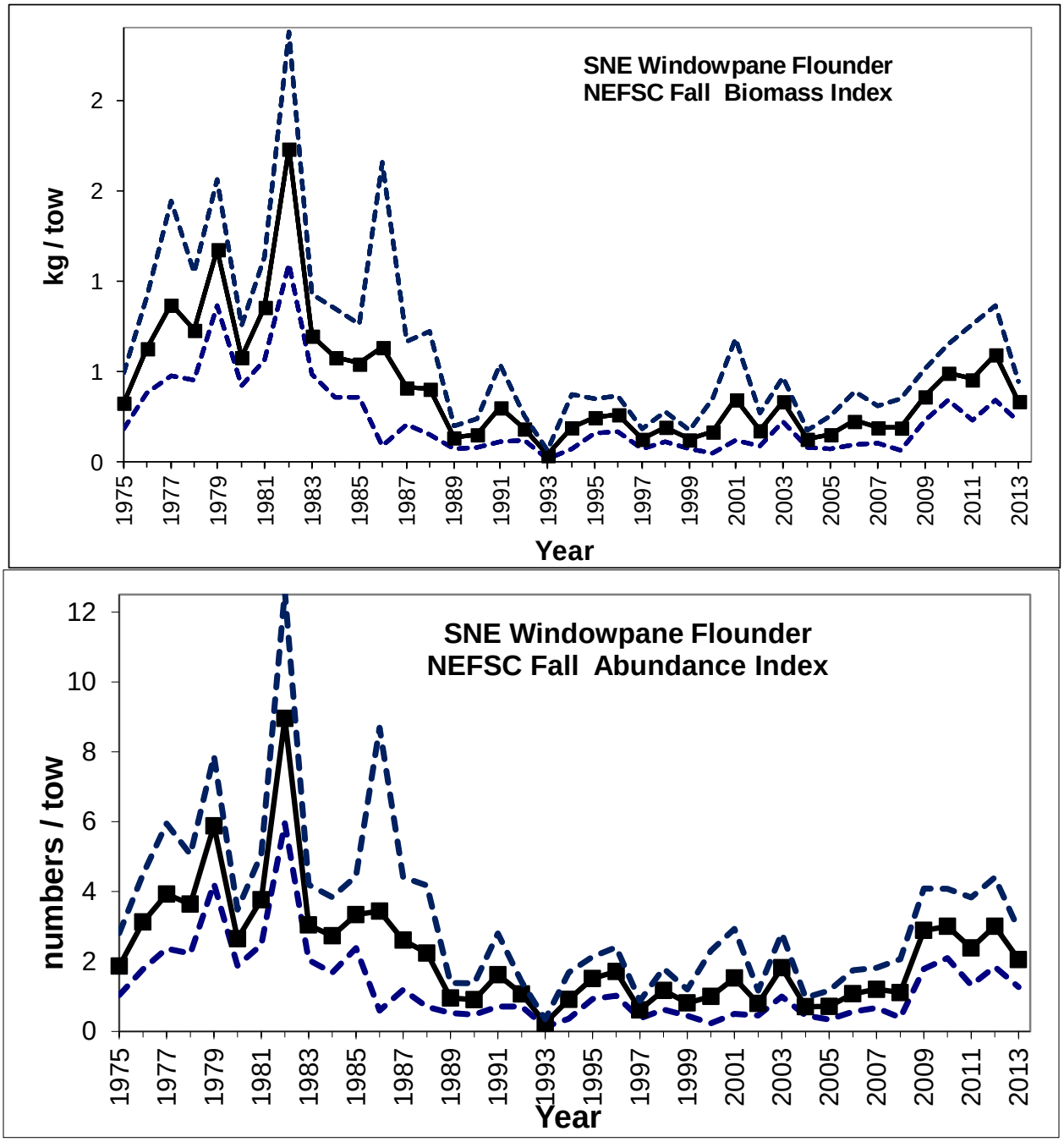
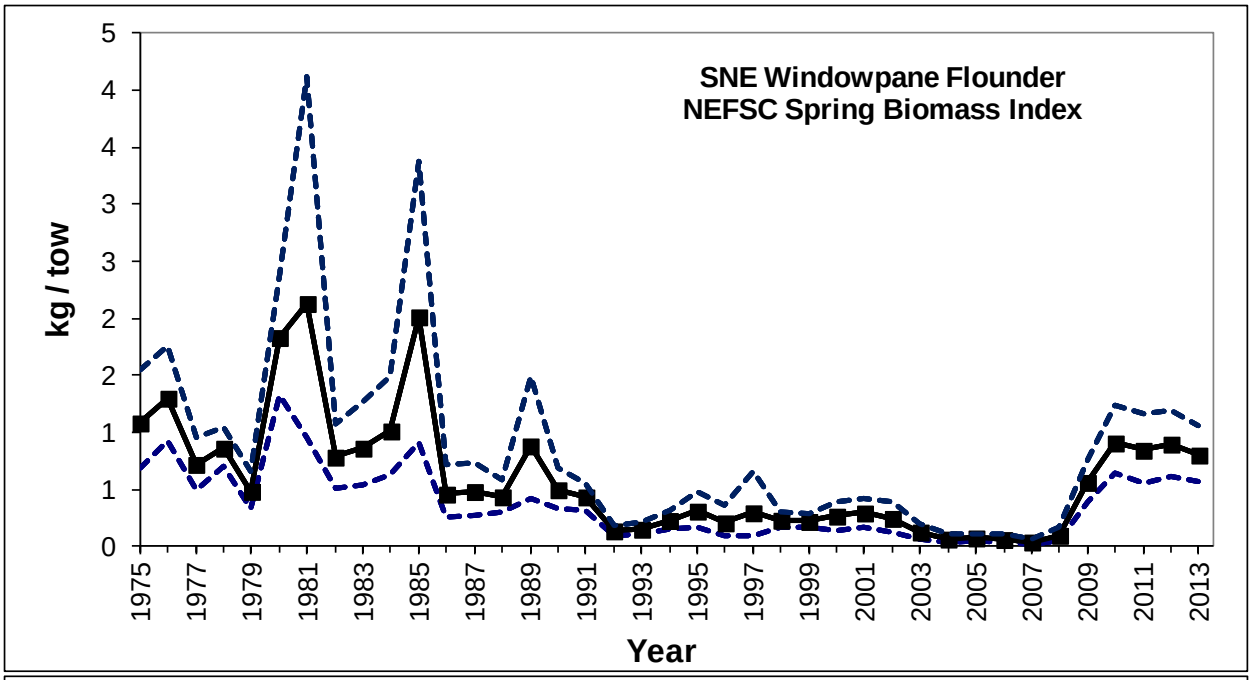


Figure 5 - Spring survey biomass index, stratified mean weight per tow (top), and survey abundance index, numbers per tow (bottom) for Southern (SNE) windowpane flounder. R/V Albatross trawl door, gear, and vessel conversion factors applied as appropriate. R/V Bigelow abundance and weight conversion factors applied from 2009-2013. Bootstrap 90% confidence intervals are also shown. Data Source: NEFSC spring bottom-trawl surveys 1975-2013.



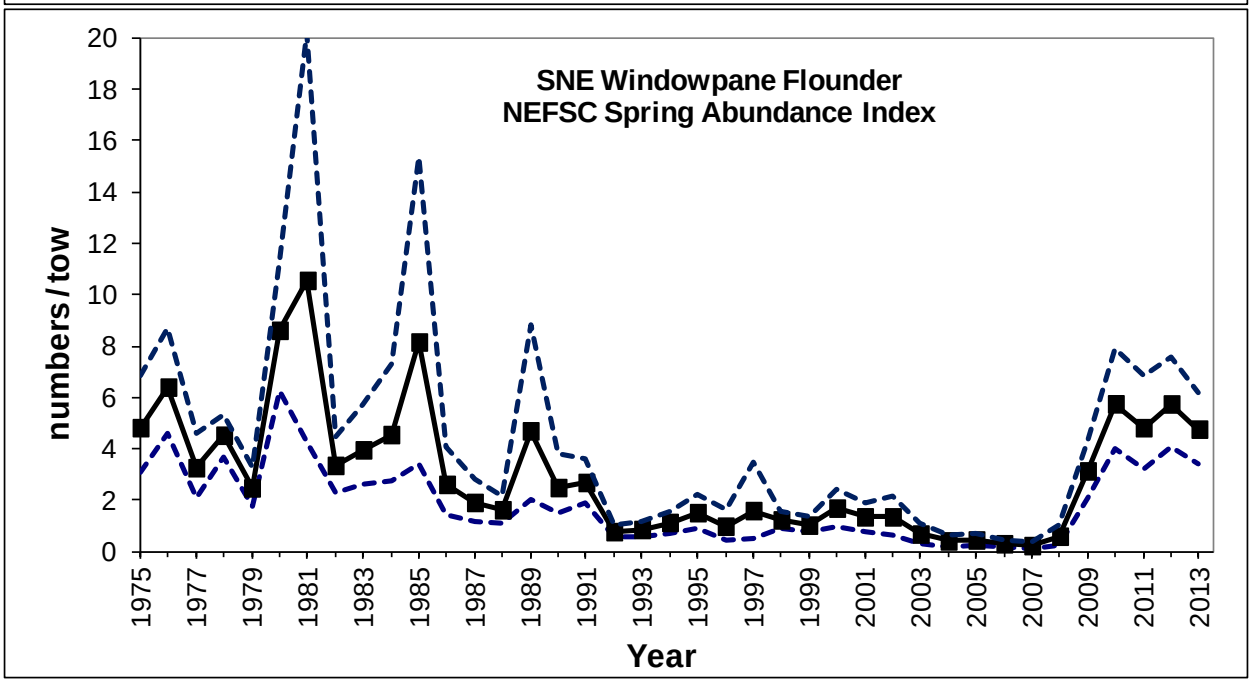


Figure 6 - Fall windowpane flounder bottom-trawl survey catches (number/tow) by year (2008-2013). Each black circle represents a survey tow with windowpane flounder catch present (i.e., survey tows with zero catches are not shown). The relative size the black circle represents the of the survey catch compared to other survey catches; the location of the survey tow is at the center of the circle. Note that surveys after 2008 were conducted on the R/V Bigelow. Data Source: NEFSC fall bottom-trawl surveys, 2008-2013. Maps are courtesy of the NEFSC.

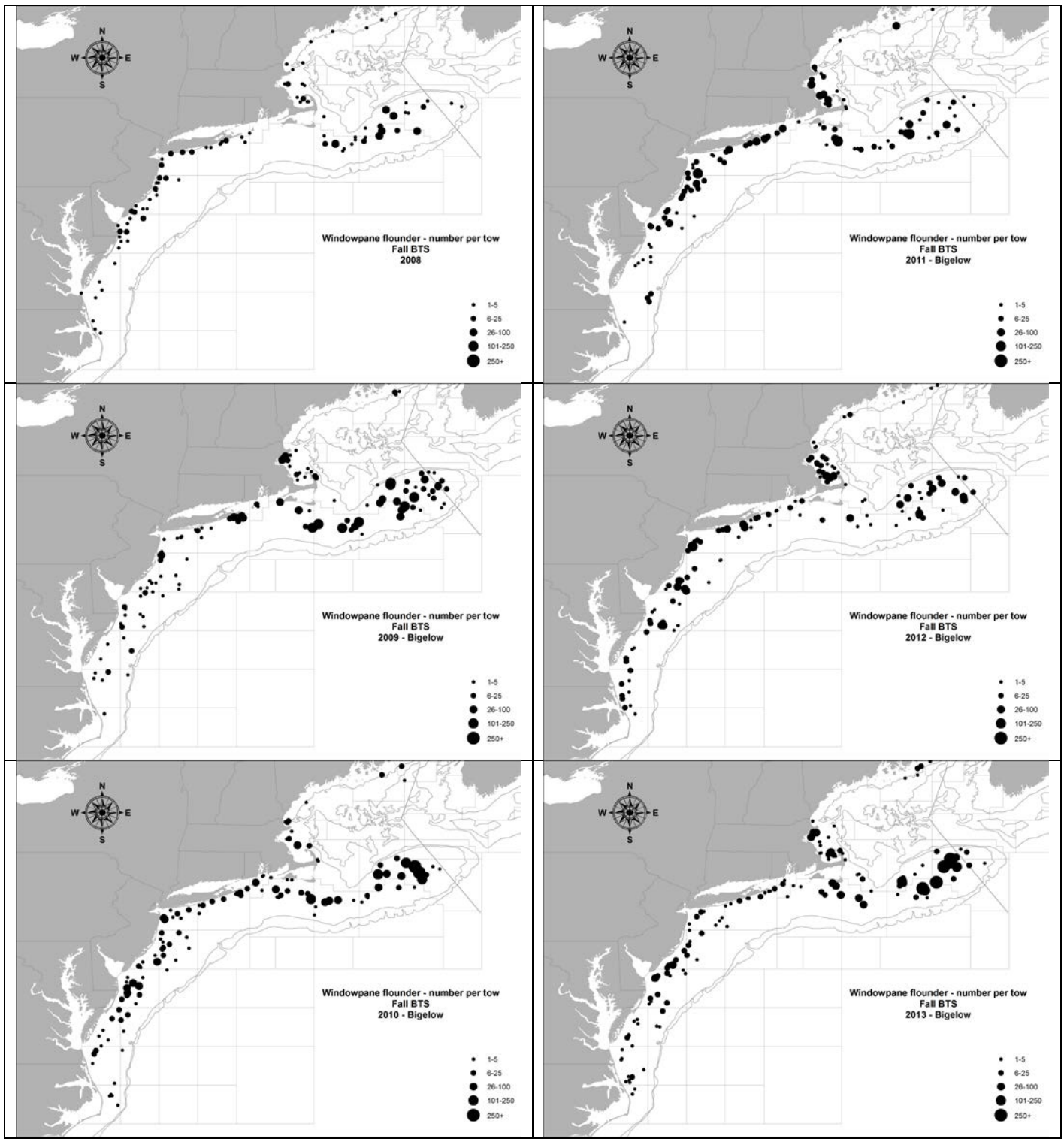
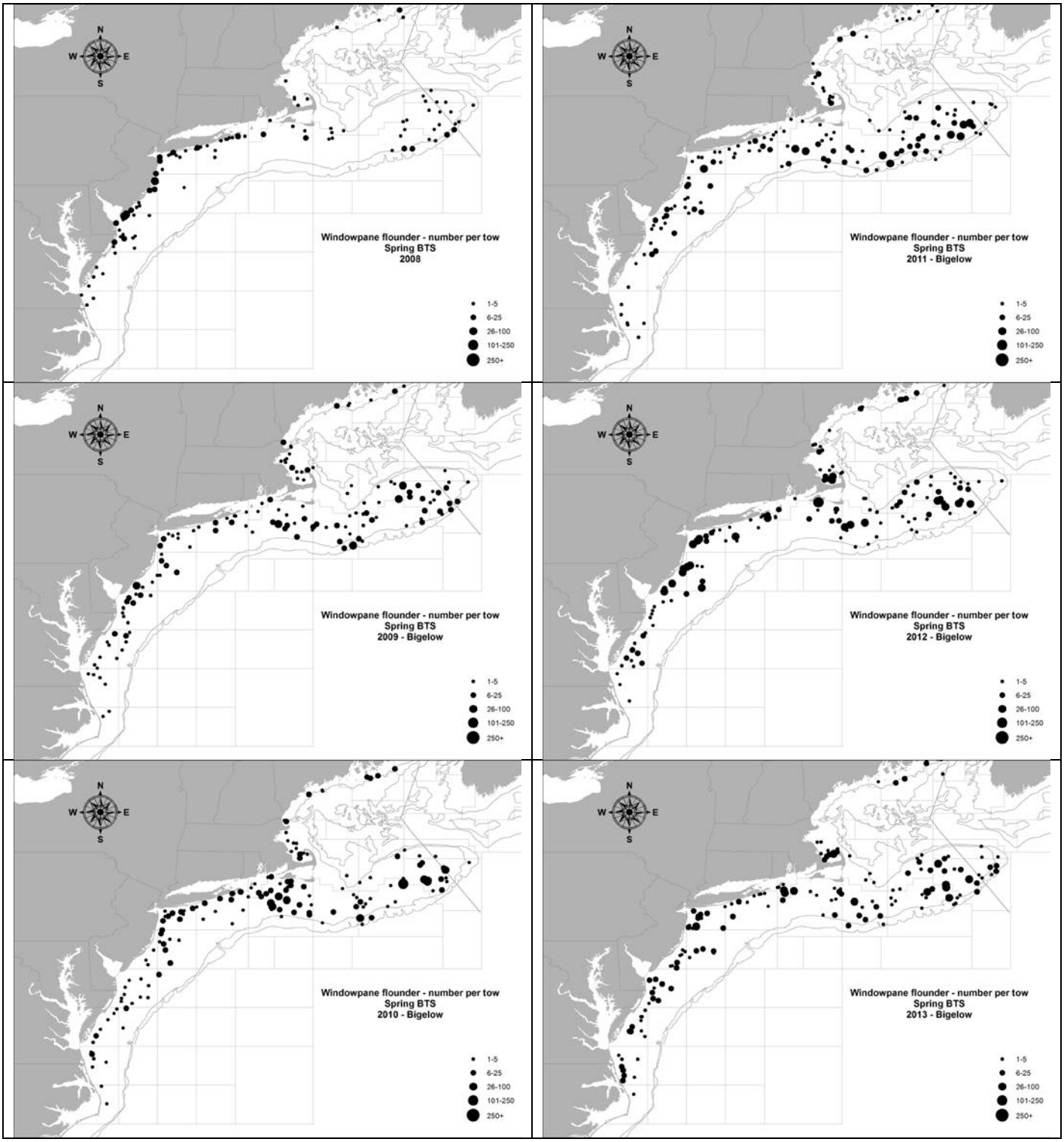


Figure 7 - Spring windowpane flounder bottom-trawl survey catches (number/tow) by year (2008-2013). Each black circle represents a survey tow with windowpane flounder catch present (i.e., survey tows with zero catches are not shown). The relative size the black circle represents the of the survey catch compared to other survey catches; the location of the survey tow is at the center of the circle. Note that surveys after 2008 were conducted on the R/V Bigelow. Data Source: NMFS fall bottom-trawl surveys, 2008-2013. Maps are courtesy of the NEFSC.



10. Summary of PDT Discussion

Windowpane Flounder Discards

The PDT reviewed the discard methodology used to calculate windowpane flounder discards using information from FY 2012 and FY 2013. The PDT did not have any major concerns in the approach. However, the PDT plans to continue examining FY 2013 trips with high discards of windowpane flounder.

Surveys

The PDT notes that updated recent fall biomass survey indices suggest stock increases for both the Northern and Southern windowpane stocks. The PDT noted these are not a replacement for the stock assessment.

Ideas for Potential Revisions to the AMs

The PDT discussed revising the AM triggers by taking into account stock status, using survey information, and utilizing catch performance. The PDT also discussed revising the gear-modification areas to seasonal AMs. The PDT briefly discussed that any of these ideas could potentially be combined for designing an AM trigger for windowpane flounder, and that the specific criteria that must be met will have to be further developed. The PDT noted that any revisions to the AM triggers should be formulaic, so that the respective body (e.g., PDT, Council, Regional Administrator) would simply have to follow the process specified in the FMP to determine the management response necessary for any ACL overages.

Idea 1: AM trigger that incorporates stock status/biomass

If certain stock criteria are met (e.g., stock is rebuilt or on its rebuilding trajectory, stock is increasing, etc.), the duration and/or size of the gear-restricted areas could be adjusted (see Appendix 1 for an example approach).

Rationale: This type of AM trigger would better account for the uncertainties in these index-based stocks because it would not rely on a single point estimate (FY catch÷ ACL), but would incorporate other updated information. Updated information could be used to determine whether there is a need, or a reduced need, to adjust management measures in order to reduce catch of the stock following an overage. This would minimize the economic impacts of the AM for a healthy stock, or a stock that continues to rebuild, while still accounting for any potential biological consequences of an overage. This idea is similar to a recent MAFMC's recreational AM action that scales the amount of an overage payback relative to stock biomass.

Idea 2: Account for Year 2 performance when an AM has been triggered for Year 3

If a subsequent overage does not occur in Year 2, or if the Year 2 ACL is underharvested by the amount of the overage, consider not implementing the gear-restricted areas in Year 3.

Rationale: Due to the delayed implementation of AMs for windowpane flounder stocks, it is possible that although an overage occurs in Year 1, a subsequent overage may not occur in Year 2. If an overage does not occur in Year 2, particularly if the Year 2 ACL is underharvested, implementing an AM in Year 3 may not be operationally or biologically necessary. In addition,

this measure would provide a greater incentive for vessels to voluntarily reduce catch of a stock to avoid the pending AM in Year 3.

Note: There could be additional criteria for this measure, such as the ACL has to be underharvested by a certain amount (% of ACL or lb of Year 1 overage). For example, if the Year 2 ACL was underharvested by the amount of the Year 1 overage, this would in effect serve as a "pound for pound payback" in Year 2, and no additional AM would be required in Year 3.

Idea 3: Seasonal Gear-Restricted Areas

Develop a seasonal aspect to the gear-restricted areas (similar to scallop AMs for yellowtail and windowpane flounder, see Appendix 2).

Rationale: The duration of the gear-restricted areas would be adjusted based on the magnitude of the overage. This would ensure that the overage was mitigated while minimizing economic impacts of the AM on the groundfish fishery.

Note: Initially in FW47, the PDT did try to look at temporal patterns, but struggled with data/technical capabilities to draw definitive conclusions. The Council was recently able to develop seasonal gear-restricted areas for windowpane for the scallop fishery, so there could be information and modeling available that would allow us to identify months with the highest bycatch rates for the groundfish fishery (if at the very least for windowpane stocks). However, seasonal areas might be much larger than the current year-round AMs to achieve biological benefits for windowpane flounder stocks.

Appendix 1

Incorporating Updated Survey Information to Verify that Windowpane Flounder AMs are Necessary

Survey Considerations

Both the Northern (GOM-GB) and Southern (SNE-MA) windowpane stocks are assessed using the AIM model which is based on the relationship between the total catch and the NEFSC Fall survey. The SSC concluded that projections based on the AIM model are too unreliable for ABC determination.

Therefore, three year ABC and ACL specifications were instead estimated from the most recent three year average of the NEFSC fall biomass survey index multiplied by 75% of the FMSY (i.e., relative 75%FMSY proxy). A three year average used for ABC determination is consistent with the average used for biomass within the AIM model. ABCs are usually set for three years which often also require bridge year assumptions for stocks which have projections. The third year of the constant windowpane ABC catch can be four to five years old when bridge years are considered.

The windowpane flounder ABCs and ACLs assume no increase in stock size over time since projections are not used. Increases in the windowpane stock could likely result in higher catches relative to the ACLs since windowpane flounder are widely spatially distributed (see Figure 6 and Figure 7) and are not a targeted species in any fishery (i.e., no possession). Evidence of higher stock biomass that is reflected in the NEFSC fall biomass survey index would suggest the stocks are increasing with the present overages in the catch (Figure 2 and Figure 4).

Example to Verify that AMs are Necessary using Updated Survey Information

Figure 8 and Figure 9 (top plots) show the NEFSC fall biomass survey index with the centered three year moving average for Northern and Southern windowpane flounder stocks. The AIM model assumes the moving average is an appropriate reflection of stock biomass. The strength of this relationship can be seen in the regression of relative F with the replacement ratio in the 2012 assessment update. The bottom plots in Figure 8 and Figure 9 show the ACLs (red series) used since the beginning of sector based management in 2010. The blue series is the monitoring windowpane catch estimate. With the current AM if the catch (blue series) is above the ACLs (red series) then the AM would be implemented based on the percentage above the ACL.

Updated fall survey indices could be used to determine if the AMs should be triggered. The green series is the 75%Fmsy proxy (from the 2012 groundfish update) multiplied by the updated centered three year average of the fall NEFSC survey biomass index. A centered three year average was used due to the assumption that the fall survey will be available to make this determination. For example, the average of 2011-2013 fall surveys are used for the 2012 AM trigger determination. Survey information might only be needed when the catch is above the ACLs to determine if AM triggers are justified, although the survey should probably be monitored for signs of possible stock declines. Continued declines in the survey index will indicate that the specified ABCs were set too high using the current AIM model framework. If the catch is above the ACL, then AM trigger percentages for the small area or large area could be determined from the higher of the two estimates; either the ACLs or the updated 75%Fmsy

survey catch estimate. Percent trigger bounds (7% small trigger, 20% larger trigger) based on this rule are plotted with the black series (bottom plots, Figure 8 and Figure 9). Triggers are determined from the ACLs in 2010 and 2011 and from the updated surveys in 2012 since this estimate was higher in 2012.

Therefore, AM triggers are determine based on the catch (blue series) relative to these trigger lines. For example the small area AM would be triggered in 2011 and 2012 for the Northern windowpane flounder stock since the blue series falls between the solid black series and the dashed black series. With this survey method the large area AM is not triggered in 2012 because there is evidence of stock increase from the three year average of the surveys. The southern stock show much higher biomass estimates from the surveys so the AM triggers (black series) are based on the survey estimates of biomass from 2010-2012. The catch (blue series) is below the trigger lines so AMs would not be triggered.

Although not finalized, the 2013 catch is projected to increase further and the ACLs are set to decrease in 2013. This will likely trigger the large area AM area for 2013 if the survey information is not used for the Northern windowpane stock. If the surveys are incorporated and show continued increases in the fall 2014 survey then the AM potentially may not be triggered based on this new approach.

Figure 10 plots the 2011-2013 average / 2008-2010 average ratios comparing the surveys to the catch for the Northern and Southern windowpane flounder stocks. The distribution of the ratios is calculated from bootstrapping of the annual values using the estimated variation for the biomass survey index and catch discard estimates. Estimated ratios greater than one show an increase and below one indicate a decrease. Catch was estimated on a calendar year basis because the AA (Area Allocation) tables were used to obtain the longer time series needed for this analysis. The Northern (GOM-GB) stock ratios indicate a decrease in the catch (0.54 median) and an increase in the fall biomass index (1.21 median or a 21% increase). The Southern (SNE) stock ratios show an increase in the catch (1.43 median) and a similar increase in the biomass as measured by the fall index (1.36 median). This analysis suggests that AMs might not be justified for the southern stock and somewhat justified for the small area in the northern stock.

Considering the survey information attempts to incorporate the stocks assessments estimate of biomass directly into the AM trigger by accounting for changes in stock size over time as an approach to verify that triggering an AM would be necessary. However possible changes in the F_{MSY} reference points will not be incorporated into the ACLs or the updated survey AM trigger method until the next updated assessment completed.

Figure 8- NEFSC fall biomass survey index with the centered three year moving average for Northern and Southern windowpane flounder stocks for Northern windowpane flounder (top). The bottom figure shows ACLs (red series), windowpane flounder catch estimate (blue), and update catch at 75%Fmsy proxy multiplied by the updated centered three year average of the fall NEFSC survey biomass index (green). If the catch is above the ACL, then AM trigger percentages for the small area or large area could be determined from the higher of the two estimates; either the ACLs or the updated 75%Fmsy survey catch estimate. Percent trigger bounds (7% small trigger, 20% larger trigger) based on this rule are plotted with the black series (dashed and solid lines respectively.

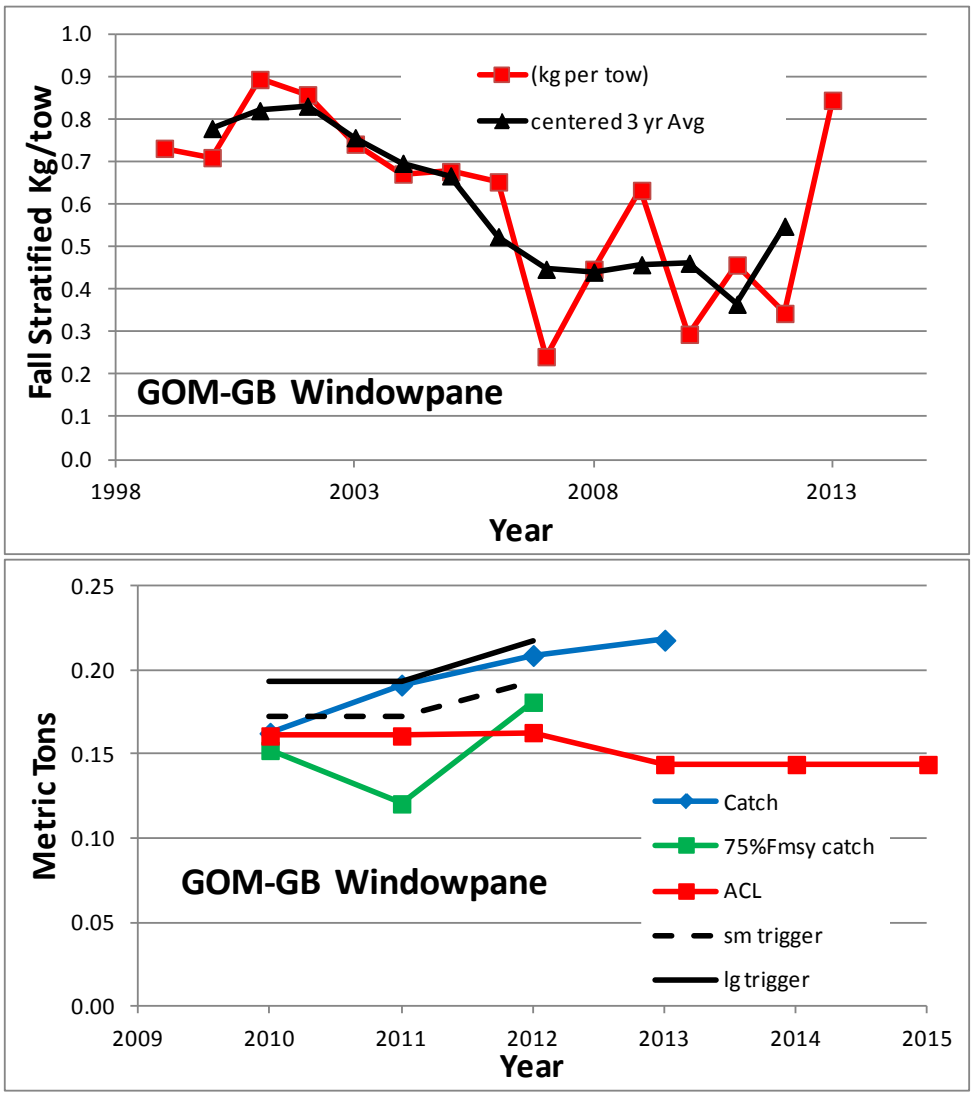


Figure 9- NEFSC fall biomass survey index with the centered three year moving average for Northern and Southern windowpane flounder stocks for Southern windowpane flounder (top). The bottom figure shows ACLs (red series), windowpane flounder catch estimate (blue), and update catch at 75%Fmsy proxy multiplied by the updated centered three year average of the fall NEFSC survey biomass index (green). If the catch is above the ACL, then AM trigger percentages for the small area or large area could be determined from the higher of the two estimates; either the ACLs or the updated 75%Fmsy survey catch estimate. Percent trigger bounds (7% small trigger, 20% larger trigger) based on this rule are plotted with the black series (dashed and solid lines respectively.

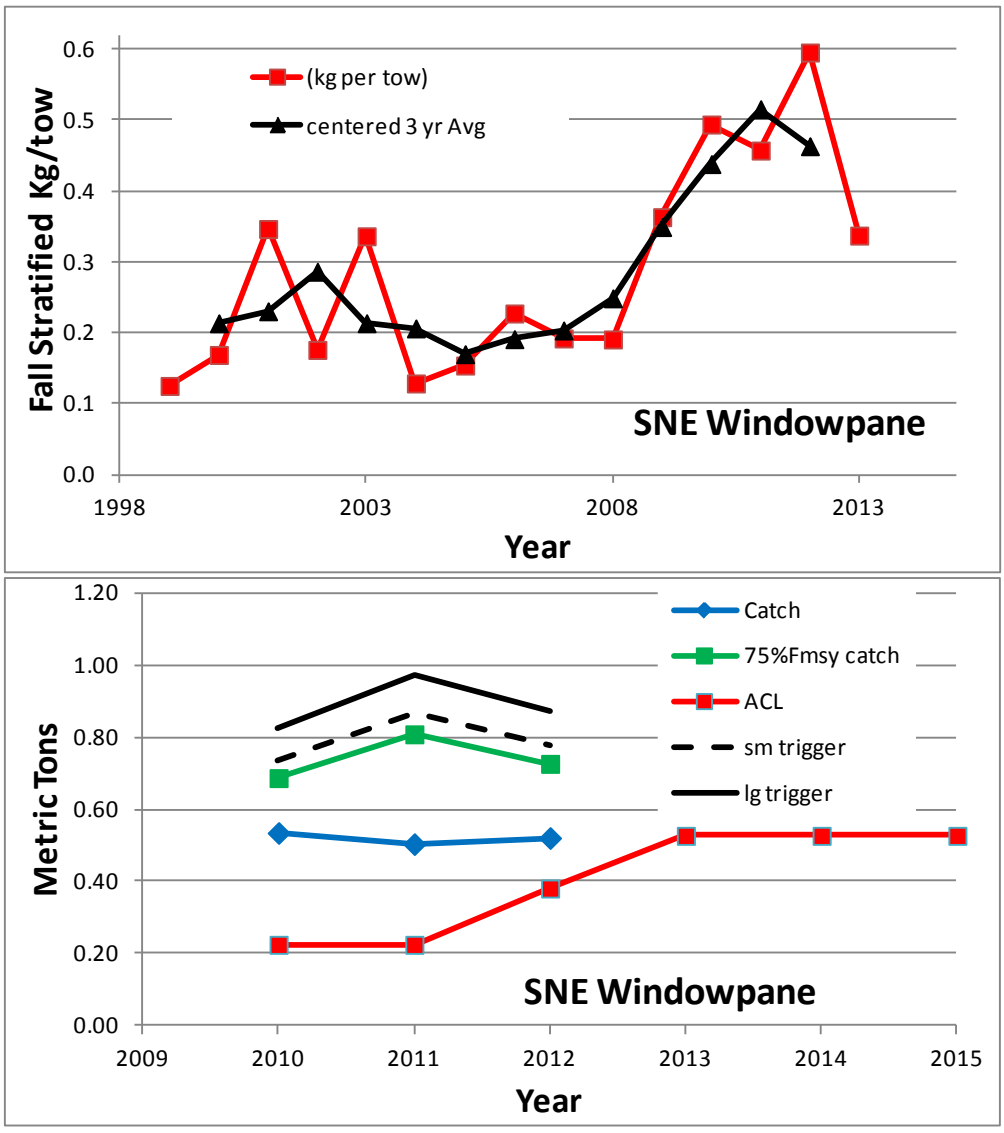
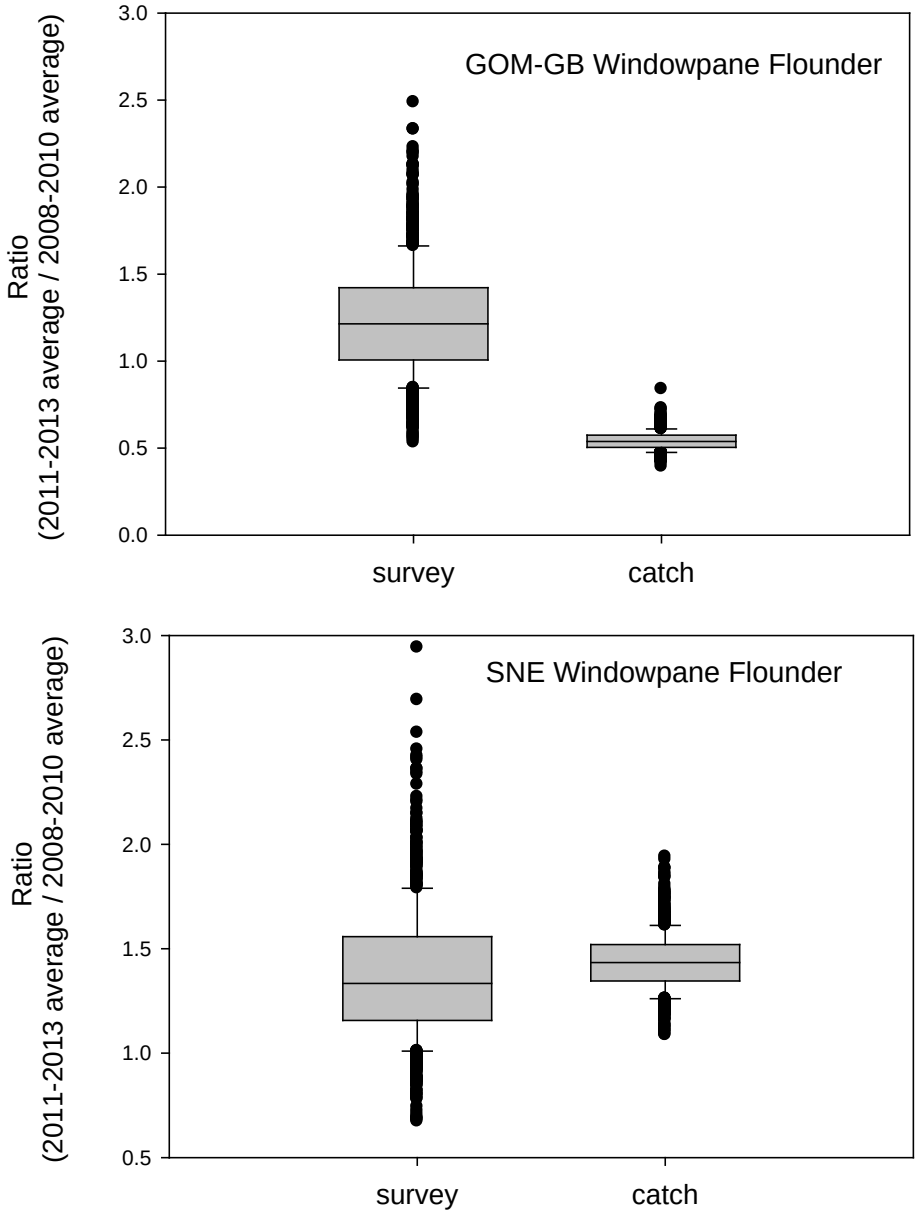


Figure 10- Boxplots of the 2011-2013 average / 2008-2010 average ratios comparing the surveys to the catch for the Northern and Southern windowpane flounder stocks.



Appendix 2

Preferred Alternative for Southern Windowpane Flounder AMs in the Scallop Fishery, Scallop Framework Adjustment 25

The Council selected two preferred alternatives for southern windowpane flounder AMs in the scallop fishery (see Figure 11). The first is a reactive AM that is a seasonal gear restricted area that would be implemented for a specified period of time with higher bycatch rates of SNE/MA windowpane flounder. The specific gear modification has two elements: 1) shorter apron in the dredge bag; and 2) reduced twine top hanging ratio. The AM area is all waters west of 71 W, excluding Mid-Atlantic access areas. If the AM is triggered and the overage by the scallop fishery is estimated to be >0 and <20%, the AM would be in effect for the month of February. If the AM is triggered and the overage by the scallop fishery is over 20% the AM would be in effect for the months of February and March.

The second is a proactive AM which would modify gear regulations to include a maximum of seven rings in the apron of a dredge in all areas. This measure may reduce flatfish bycatch by requiring vessels that fish in the AM area all year to use a maximum of seven rows, and enable vessels to voluntarily fish with an even shorter apron, less than seven rings, to proactively reduce flatfish bycatch in any area or season. This measure would apply to all scallop dredge vessels (LA and LAGC IFQ), fishing west of 71 W (excluding access areas) and be required all year.

Figure 11 : From Scallop FW 25; Southern windowpane flounder area under consideration for WP AM Alternative 3 – seasonal gear restricted area (Preferred Alternative).