

*draft working paper for peer review only*



# Northern windowpane flounder

## *2015 Assessment Update Report*

U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
Woods Hole, Massachusetts

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*This assessment of the northern windowpane flounder (*Scophthalmus aquosus*) stock is an operational update of the 2012 assessment which included updates through 2010 (NEFSC 2012). Based on the 2012 assessment the stock was overfished, and overfishing was occurring. This assessment updates commercial fishery catch data, survey indices of abundance, AIM model results, and reference points through 2014.*

**State of Stock:** Based on this updated assessment, the northern windowpane flounder (*Scophthalmus aquosus*) stock is overfished but overfishing is not occurring (Figures 1-2). The mean NEFSC fall bottom trawl survey index from years 2012, 2013 and 2014 (a 3-year moving average is used as a biomass index) was 0.535 kg/tow which is lower than the  $B_{Threshold}$  of 0.777 kg/tow. The 2014 relative fishing mortality was estimated to be 0.393 kt per kg/tow which is lower than the  $F_{MSY}$  proxy of 0.450 kt per kg/tow.

Table 1: Catch and model results table for northern windowpane flounder. All landings and discard weights are rounded to the nearest metric ton. Biomass index is in units of kg/tow, and relative F is in units of kt per kg/tow.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	<i>Data</i>									
Commercial landings	51	46	117	46	28	0	0	1	0	0
Commercial discards	917	637	974	329	412	235	180	198	355	215
Total catch	967	683	1,092	376	440	236	180	199	355	215
	<i>Model Results</i>									
Biomass index	0.7	0.67	0.52	0.45	0.44	0.47	0.43	0.34	0.52	0.54
Relative F	1.39	1.02	2.08	0.85	1	0.51	0.42	0.58	0.68	0.393

Table 2: Reference points estimated in the 2012 assessment and in the current assessment update.  $F_{MSY}$  proxy is in units of kt per kg/tow.

	2012	Current
$F_{MSY}$ proxy	0.44	0.450 (0.002 - 0.765)
$B_{MSY}$ proxy (kg/tow)	1.60	1.554
MSY proxy (mt)	700	700
<i>Overfishing</i>	Yes	No
<i>Overfished</i>	Yes	Yes

### Special Comments:

- What are the most important sources of uncertainty in this stock assessment? Explain, and describe qualitatively how they affect the assessment results (such as estimates of biomass, F, recruitment, and population projections).

*The main source of uncertainty in this assessment is the lack of windowpane discard*

*estimates from Canadian fisheries to add to the catch component of model input. Discard estimates were from the U.S. only. There is overlap between the survey area and Canadian fishing grounds (Van Eeckhaute et al. 2010), which means catch from within the stock area was likely underestimated.*

- Does this assessment model have a retrospective pattern? If so, is the pattern strong, moderate, or mild?  
*N/A*
- Based on this stock assessment, are population projections well determined or uncertain?  
*N/A*
- Describe any changes that were made to the current stock assessment, beyond incorporating additional years of data and the affect these changes had on the assessment and stock status.  
*No changes were made to the northern windowpane flounder assessment for this update other than the incorporation of four years of new NEFSC fall bottom trawl survey data and four years of new U.S. commercial landings and discard data (2011 - 2014).*
- If the stock status has changed a lot since the previous assessment, explain why this occurred.  
*The stock status of northern windowpane flounder changed from 'overfished and overfishing is occurring' to 'overfished and overfishing is not occurring' due to stable-to-decreasing catch since 2008, and an increasing trend in the survey index since 2010.*
- Indicate what data or studies are currently lacking and which would be needed most to improve this stock assessment in the future.  
*The northern windowpane flounder assessment could be improved by estimating the Canadian windowpane removals and, although to a lesser degree, the 'general category' scallop dredge fleet discards from within the stock area and using them as additional catch input to the AIM model. While the model fit now is reasonable (the relationship between  $\ln(\text{relative } F)$  and  $\ln(\text{replacement ratio})$ , a measure of the relationship between catch and survey index values, has a  $p$ -value of 0.079) there are probably removals unaccounted for in the model and the fit can likely be improved.*
- Are there other important issues?  
*None.*

## **References:**

Most recent assessment update:

Northeast Fisheries Science Center. 2012. Assessment or Data Updates of 13 Northeast Groundfish Stocks through 2010. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-06; 789 p. Available online at <http://nefsc.noaa.gov/publications/>

Most recent benchmark assessment:

Northeast Fisheries Science Center. 2008. Assessment of 19 Northeast Groundfish Stocks through 2007: Report of the 3<sup>rd</sup> Groundfish Assessment Review Meeting (GARM III), Northeast Fisheries Science Center, Woods Hole, Massachusetts, August 4-8, 2008. US Dep Commer, NOAA Fisheries, Northeast Fish Sci Cent Ref Doc. 08-15; 884 p + xvii.

Van Eeckhaute, L., Sameoto, J., and A. Glass. 2010. Discards of Atlantic cod, haddock and yellowtail flounder from the 2009 Canadian scallop fishery on Georges Bank. TRAC Ref. Doc. 2010/10. 7p.

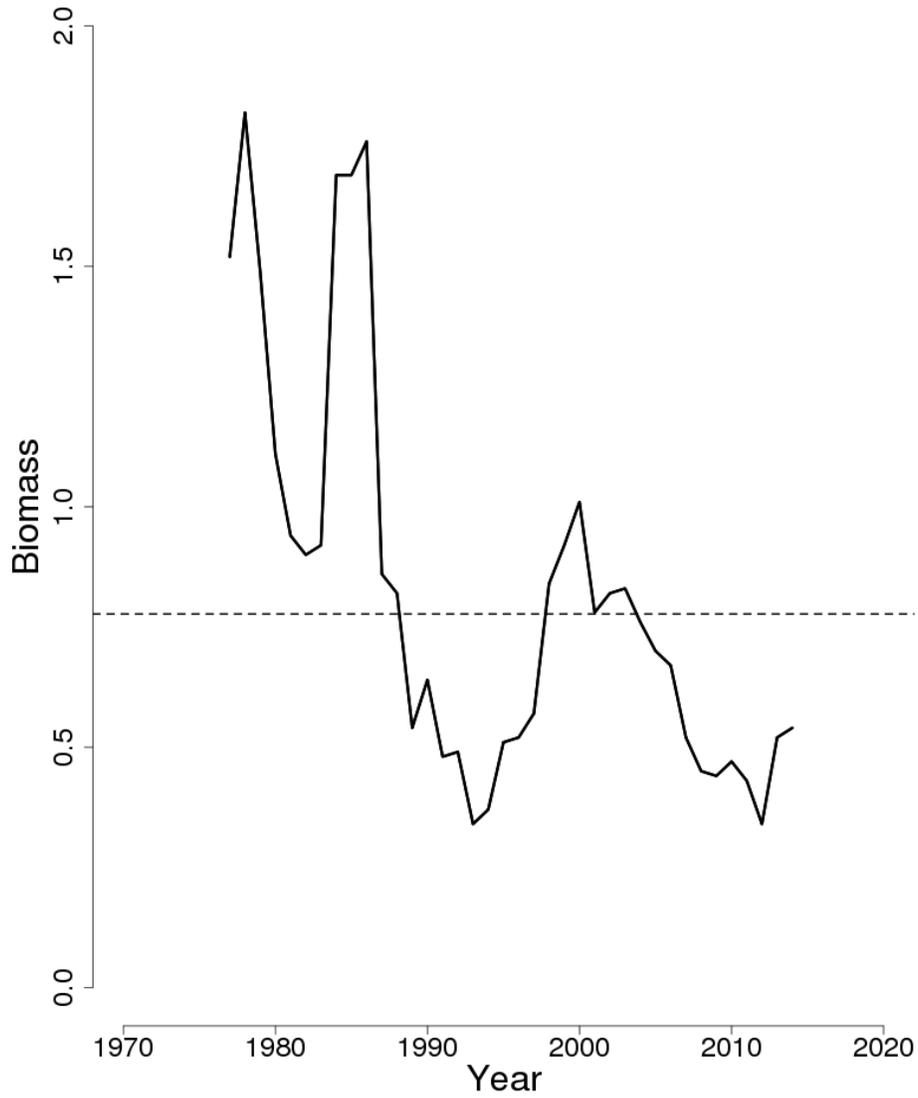


Figure 1: Trends in the biomass index (a 3-year moving average of the NEFSC fall bottom trawl survey index) of northern windowpane flounder between 1975 and 2014 from the current assessment, and the corresponding  $B_{Threshold} = \frac{1}{2} B_{MSY} proxy = 0.777$  kg/tow (horizontal dashed line).

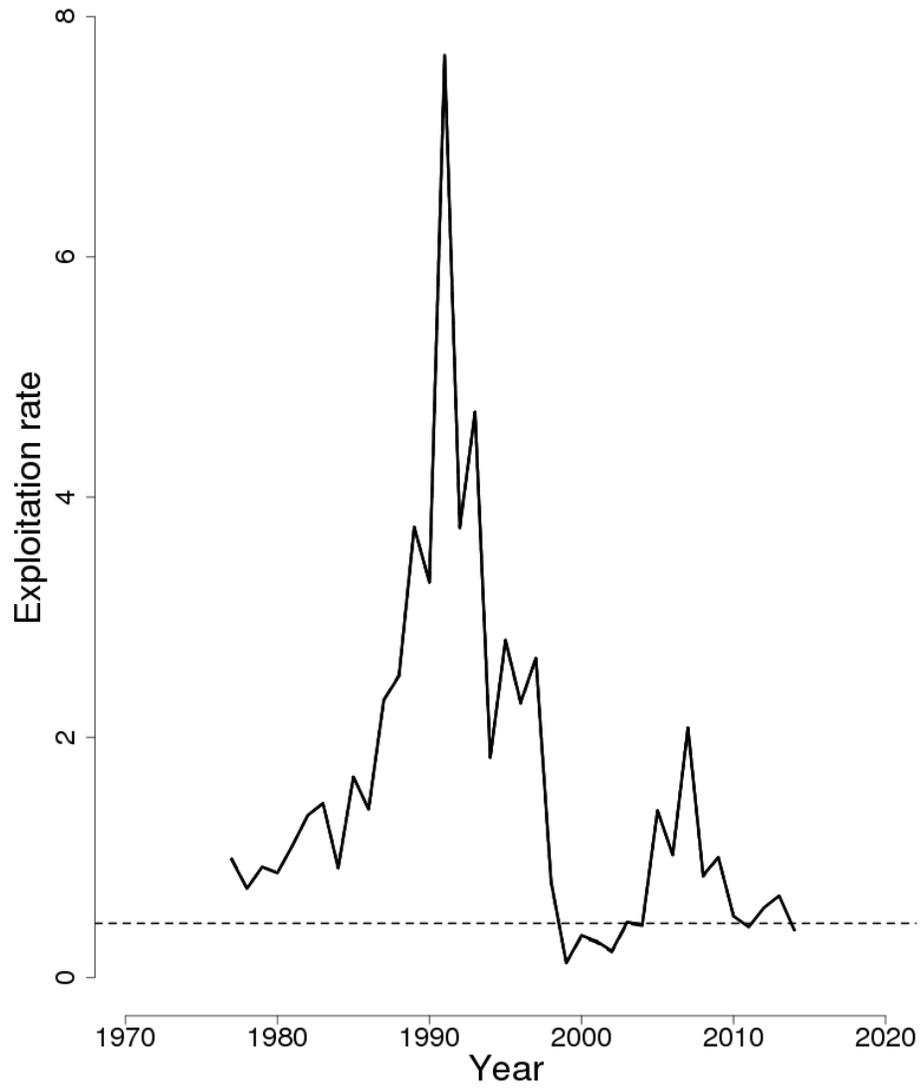


Figure 2: Trends in relative fishing mortality of northern windowpane flounder between 1975 and 2014 from the current assessment, and the corresponding  $F_{MSY}$  proxy=0.45 (horizontal dashed line).

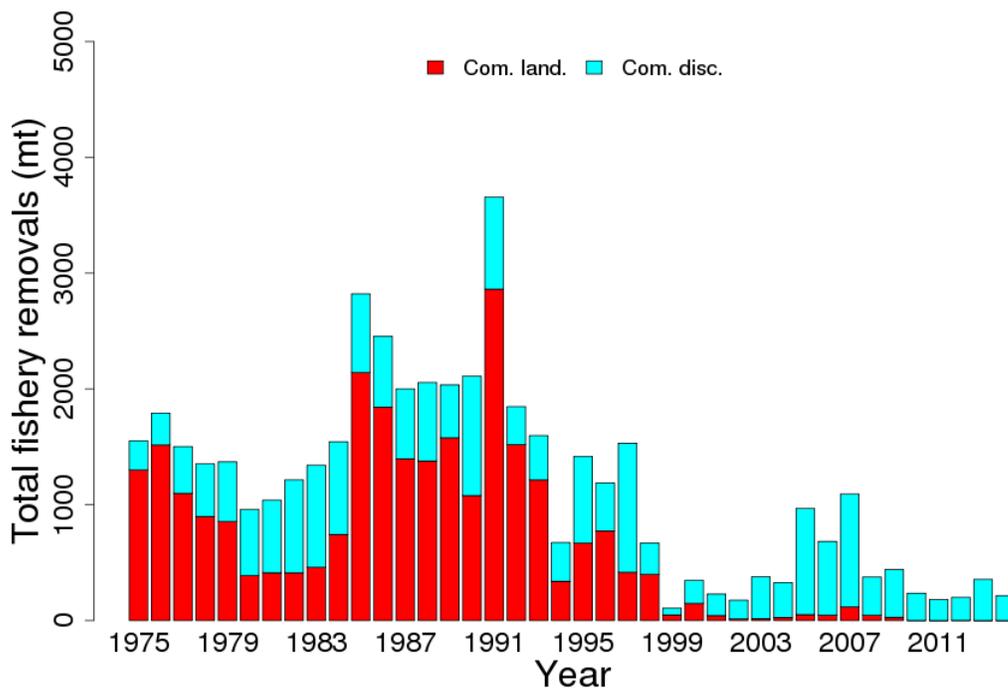


Figure 3: Total catch of northern windowpane flounder between 1975 and 2014 by disposition (landings and discards).

### NEFSC Fall bottom trawl survey

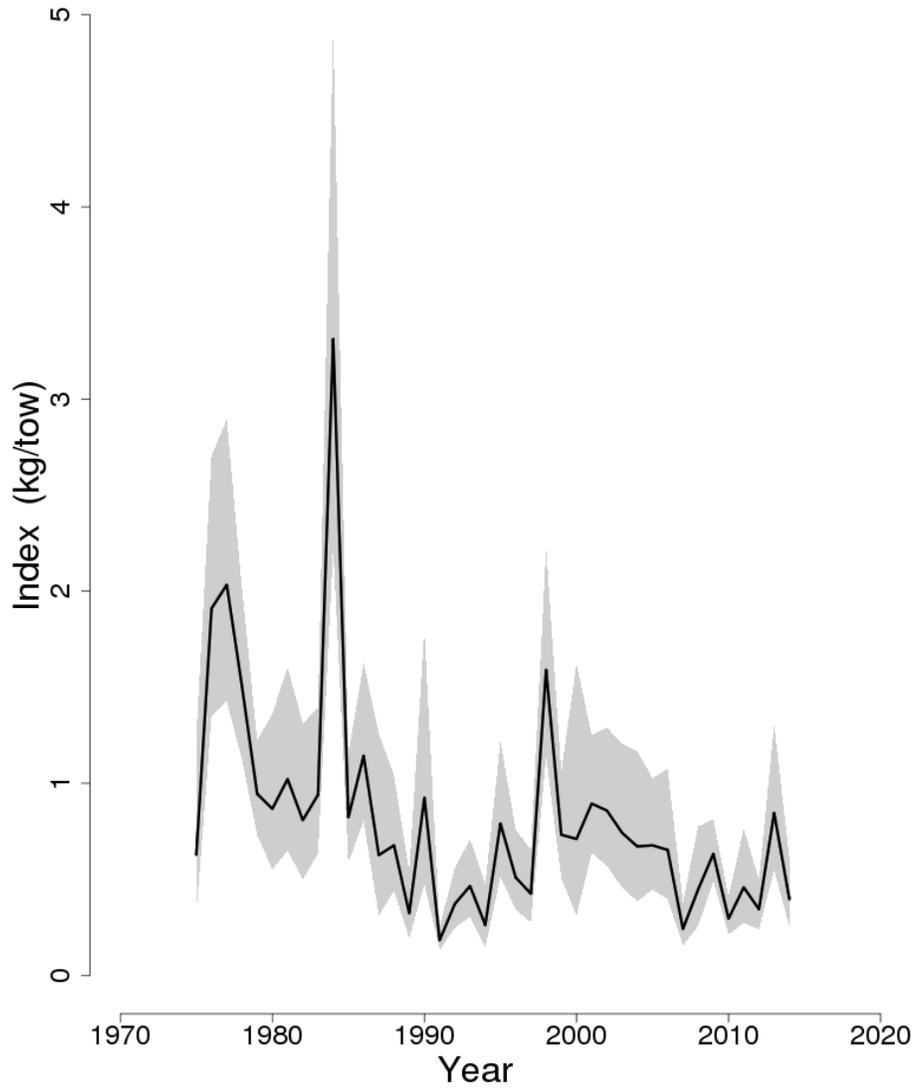


Figure 4: NEFSC fall bottom trawl survey indices in kg/tow for northern windowpane flounder between 1975 and 2014. The approximate 90% lognormal confidence intervals are shown.