

Q. Southern New England-Mid-Atlantic Bight Windowpane Flounder
by Lisa Hendrickson

1.0 Background

No stock structure information is available. Therefore, a provisional arrangement has been adopted that recognizes two stock areas based on apparent differences in growth, sexual maturity, and abundance trends between windowpane flounder from Georges Bank and Southern New England. The proportion of total landings contributed by the Mid-Atlantic area is low, so windowpane flounder landings from the Mid-Atlantic area are combined with those from Southern New England and the two regions are assessed as the southern New England and Mid-Atlantic Bight (SNE-MAB) stock.

The SNE-MAB windowpane flounder stock has never been formally assessed as part of the SAW/SARC process. The following index-based assessment represents an update of the assessment presented in October 2002 at the Groundfish Assessment Review Meeting (GARM) (NEFSC 2002a). Following the 2002 GARM, a re-evaluation of the overfishing definition was conducted and changes in the biological reference points were recommended (NEFSC 2002b).

2.0 Assessment Results

2.1 The Fishery

Commercial landings of windowpane flounder were first recorded in 1975. During 1985-1998 more than 50% of the windowpane landings were from the GOM-GB stock. Since 2001, the trend has reversed and most of the windowpane landings have come from the SNE-MAB stock. Landings ranged between 500 and 900 mt during 1975-1981, then increased sharply to a record high of 2,100 mt in 1985 (Table Q1 and Figure Q1). Thereafter, landings declined rapidly to 100 mt in 1995. During 1996-2000, landings stabilized at 100-200 mt, then declined to the lowest level on record in 2004 (44 mt).

Discards of windowpane flounder have never been quantified and were not evaluated for this assessment update. Therefore, only the landings are included in the calculation of exploitation indices.

2.2 Research Survey Indices

Relative biomass indices, stratified mean weight (kg) per tow, of SNE-MAB windowpane flounder from the NEFSC autumn bottom trawl surveys, conducted during 1963-2004, are presented in Table Q1 and Figure Q2. Biomass indices are highly variable, but indicate a declining trend 1963 and 1975, from a time series peak (1.99 kg per tow) to 0.14 kg per tow. Biomass indices then increased to 0.87 kg per tow in 1982, then declined to a record low in 1993 (0.03 kg per tow). During 1994-2004, biomass was fairly stable but at a very low level.

2.3 Biological Reference Points

Biological reference points for SNE-MAB windowpane flounder were derived from survey-based proxies of biomass and exploitation rates and are based on an MSY estimate (900 mt) from an ASPIC model. Biological reference points were subsequently revised based on a stock replacement ratio analysis, but target reference points were not revised (NEFSC 2002b). The threshold F is defined as an F_{MSY} proxy (= 0.98) when the NEFSC autumn survey index is greater than 0.92 kg per tow (equal to a B_{MSY} proxy) and declines linearly to zero at 50% of the B_{MSY} proxy (= 0.46 kg/tow).

2.4 Relative Exploitation Rates and Stock Status

Relative exploitation rates (landings/NEFSC autumn survey biomass index) declined sharply after reaching a peak in 1993 (Table Q1 and Figure Q3) and were at or below the F_{MSY} proxy (= 0.98) during 1994-2004. The 2002-2004 autumn survey mean biomass index is 0.19 kg/tow and the 2002-2004 mean exploitation index (landings/NEFSC autumn survey biomass index) is 0.37. Therefore, the stock was overfished but overfishing was not occurring in 2004 (Figure Q4).

Autumn survey biomass indices were at or near the levels projected in Amendment 13 during 2002 and 2003, but the observed biomass index was below the projected level in 2004 (Figure Q5).

3.0 Sources of Uncertainty

3.1 The influence of discards on the evaluation of current stock status relative to biological reference points is unclear.

4.0 Research Recommendations

4.1 Include discards in the estimated catch.

4.2 Investigate inclusion of the inshore strata in the NEFSC autumn survey time series.

5.0 Panel Discussion

The Panel noted that discards are not included in the estimate of the relative exploitation index and recommends that future assessments attempt to estimate discards. In addition, the NMFS inshore survey strata are not used in the calculation of the trawl survey index and the Panel recommends that these be included in future assessments. If these recommendations are adopted, the reference points will need to be re-evaluated.

6.0 Literature Cited

NEFSC [Northeast Fisheries Science Center]. 2002a. Assessment of 20 northeast groundfish stocks through 2001: A report of the Groundfish Assessment Review Meeting

(GARM), Northeast Fisheries Science Center, Woods Hole, Massachusetts, October 8-11, 2002. *Northeast Fish. Sci. Cent. Ref. Doc.* 02-16. 511 p.

NEFSC [Northeast Fisheries Science Center]. 2002b. Final report of the working group on re-evaluation of biological reference points for New England groundfish. 231 p.

Table Q1. Landings (mt), NEFSC autumn survey biomass indices (stratified mean kg per tow, offshore strata 1-12 and 61-76), and exploitation indices (landings/autumn survey biomass index) for Southern New England-Mid-Atlantic Bight windowpane flounder during 1963-2004. Landings include Statistical Areas beginning with 6, 526, 530-539 and 541.

Year	Landings ¹ (mt)	Biomass Indices (kg per tow)	Exploitation Indices (landings/biomass index)
1963		1.99	
1964		0.87	
1965		0.78	
1966		1.11	
1967		0.81	
1968		0.90	
1969		0.37	
1970		0.31	
1971		0.40	
1972		0.57	
1973		0.58	
1974		0.26	
1975	681	0.14	4.76
1976	568	0.36	1.58
1977	647	0.54	1.21
1978	898	0.54	1.67
1979	633	0.76	0.83
1980	532	0.26	2.08
1981	883	0.52	1.70
1982	651	0.87	0.75
1983	798	0.37	2.17
1984	1,088	0.25	4.40
1985	2,065	0.62	3.34
1986	1,381	0.56	2.45
1987	887	0.44	2.02
1988	1,172	0.42	2.76
1989	1,121	0.09	12.18
1990	890	0.18	4.92
1991	817	0.41	2.02
1992	584	0.18	3.24
1993	469	0.03	15.14
1994	200	0.23	0.89
1995	100	0.20	0.50
1996	200	0.26	0.76
1997	107	0.13	0.84
1998	123	0.18	0.68
1999	116	0.12	1.00
2000	126	0.17	0.75
2001	128	0.34	0.38
2002	85	0.17	0.49
2003	47	0.30	0.16
2004	44	0.10	0.44

¹ Landings from 1995-2004 were prorated based on Vessel Trip Reports.

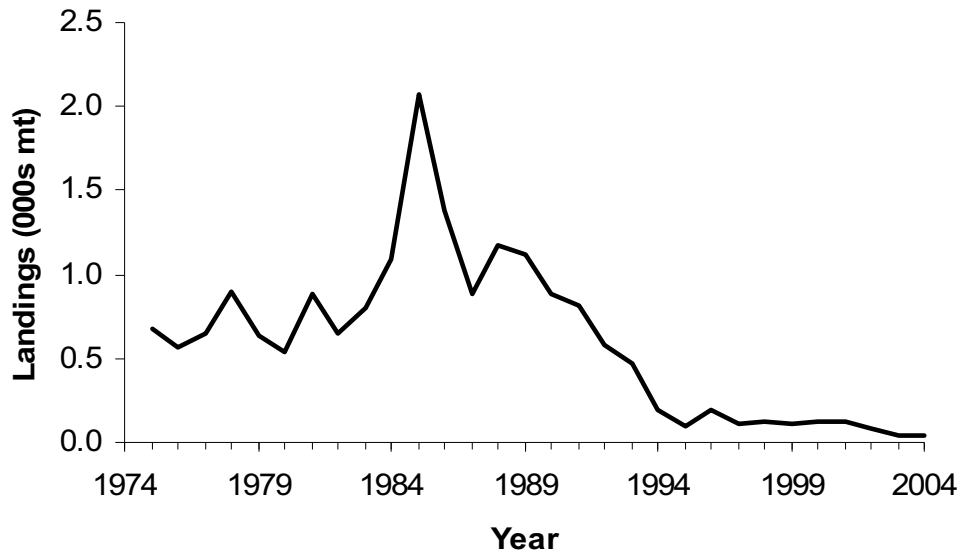


Figure Q1. Commercial landings of SNE-MAB windowpane flounder during 1975-2004.

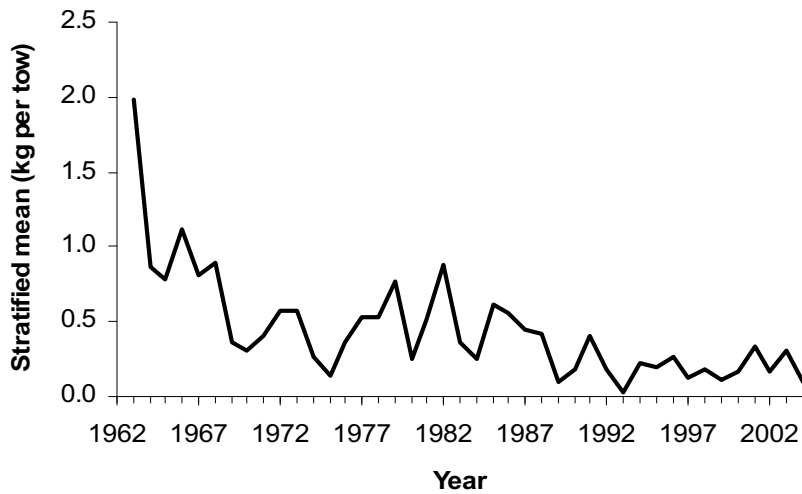


Figure Q2. Relative biomass indices (stratified mean kg per tow) for Southern New England-Mid-Atlantic Bight windowpane flounder from the NEFSC autumn bottom trawl surveys conducted during 1963-2004.

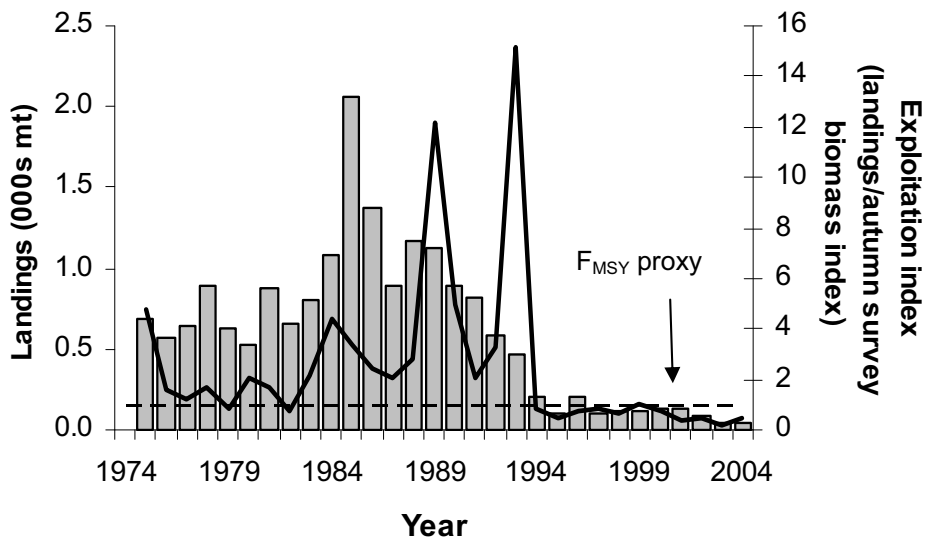


Figure Q3. Relative exploitation indices (landings/autumn survey biomass indices) and landings (mt) of Southern New England-Mid-Atlantic Bight windowpane flounder during 1975-2004.

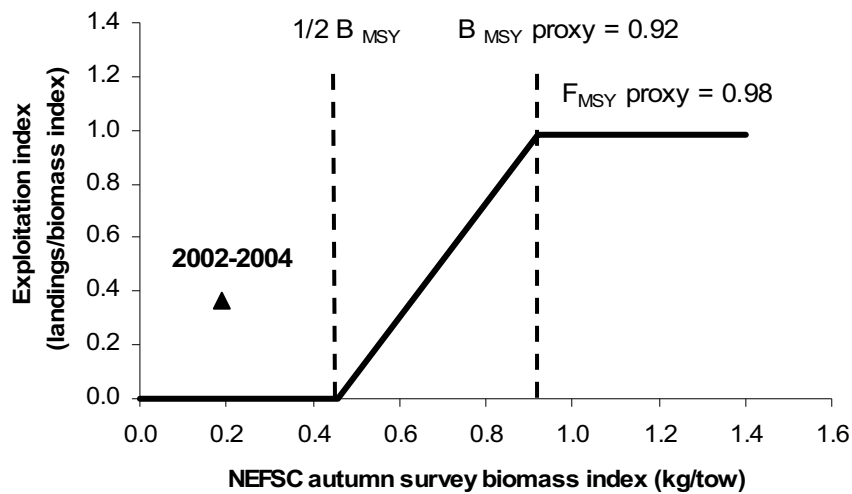


Figure Q4. Harvest control rule for SNE-MAB windowpane flounder based on survey equivalents of MSY-based reference points and the 2002-2004 means of the exploitation and biomass indices.

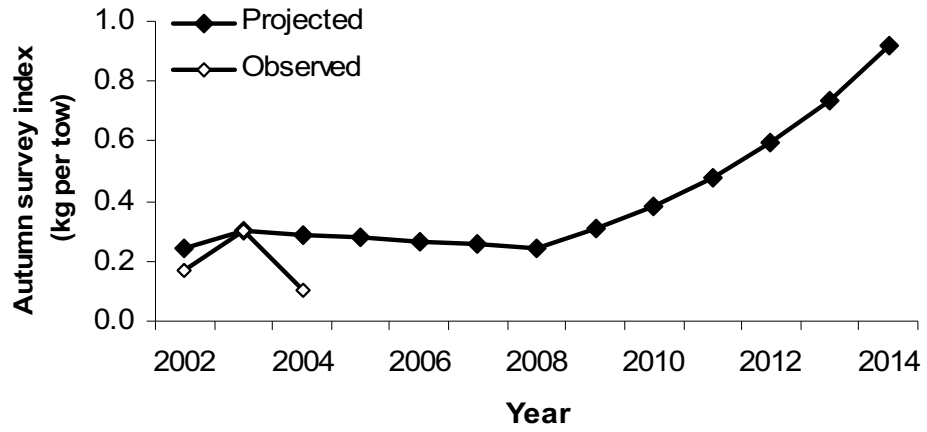


Figure Q5. Observed autumn survey biomass indices, during 2002-2004, in relation to Amendment 13 projections of the survey biomass indices for SNE-MAB windowpane flounder.