

## **P. Southern New England/Mid-Atlantic 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 in fish from Georges Bank and from Southern New England. The proportions of total landings contributed by the Gulf of Maine and Mid-Atlantic areas are low (less than 7%), so data from these areas are combined with those from Georges Bank and Southern New England, respectively.

The southern windowpane flounder stock, which includes the southern New England and Mid-Atlantic Bight regions, has never been assessed through the SAW/SARC process. The following assessment is an update of the information contained in the Status of the Fishery Resources off the Northeastern United States, 2000 (Hendrickson 2000).

### **2.0 2000 Assessment Update**

#### The Fishery

Commercial landings from this stock exceeded those from the Gulf of Maine-Georges Bank stock during 1980-1984, and reached a record high of 2,100 mt in 1985 (Table P1; Figure P1). Landings declined rapidly between 1988 and 1995, from 2,100 mt to a record low of 100 mt in 1995. Landings in 1998 and 1999 were 123 mt and 116 mt, respectively.

#### Research Survey Indices

Stratified mean weight (kg) per tow and mean number per tow of SNE-MAB windowpane flounder from the NEFSC autumn (October 1963-1999) bottom trawl surveys are presented in Table P2. NEFSC autumn survey biomass indices are also shown in relation to the landings for this stock in Figure P1. Both landings and survey biomass indices appear to have stabilized since 1995 at the lowest level on record.

### **3.0 Harvest Control Rule**

The MSY-based control rule for SNE-MAB windowpane flounder adopted in Amendment 9 was derived from survey-based proxies of biomass and exploitation. The control rule defines a maximum sustainable yield for the stock of 900 mt. The threshold  $F$  is defined as an FMSY proxy ( $= 2.24$ ) when the NEFSC autumn survey index is greater than 0.41 kg/tow (minimum biomass threshold equal to a BMSY proxy) and declines linearly to zero at 25% of the BMSY proxy ( $= 0.10$  kg/tow). The target exploitation index is defined as the 80th percentile of the FMSY bootstrap estimates ( $= 1.60$ ) (Figure P2).

Exploitation indices (catch/NEFSC autumn survey biomass index) during 1975-1999 are presented, in Table P3 and Figure P3, in relation to the harvest control rule FMSY proxy (=2.24). The 1997-1999 mean exploitation index equals 0.84 and the mean of the 1997-1999 autumn mean weight per tow index equals 0.14 (Figure P2).

#### **4.0 Sources of Uncertainty**

- Stock structure is uncertain.
- Discarding is not quantified and may a significant fraction of the catch given recent groundfish retention restrictions.
- Vessel trip reports have been used to prorate the landings, since 1995, and a fraction of the landings from Southern New England may have been reported as Georges Bank landings or vice versa.

#### **5.0 References**

Hendrickson, L. C. 2000. Windowpane Flounder. In: Clark, S.H. (ed.) Status of the Fishery Resources off the Northeastern United States. NOAA Tech. Mem. NMFS-NE-115. NEFSC web page <http://www.nefsc.nmfs.gov/sos/spsyn/fldrs/window.html/>

Table P1. Landings (mt) of Southern New England – Mid-Atlantic Bight windowpane flounder from 1975-1999. Includes Statistical Areas beginning with 6, 526, 530-539 and 541.

Year	Landings (mt)
1975	681
1976	568
1977	647
1978	898
1979	633
1980	532
1981	883
1982	651
1983	798
1984	1088
1985	2065
1986	1381
1987	887
1988	1172
1989	1121
1990	890
1991	817
1992	584
1993	469
1994	200
*1995	100
1996	200
1999	7107
1998	123
1999	116

\* Landings during 1995-1999 were prorated based on Vessel Trip Reports.

Table P2. Standardized, stratified mean weight (kg) per tow for Southern New England-Mid-Atlantic Bight windowpane flounder from the NEFSC autumn research vessel bottom trawl surveys during 1963-1999. Survey strata included were offshore strata 1-12 and 61- 76.

Year	Weight per tow (kg)
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	0.14
1976	0.36
1977	0.54
1978	0.54
1979	0.76
1980	0.26
1981	0.52
1982	0.87
1983	0.37
1984	0.25
1985	0.62
1986	0.56
1987	0.44
1988	0.42
1989	0.09
1990	0.18
1991	0.41
1992	0.18
1993	0.03
1994	0.23
1995	0.20
1996	0.26
1997	0.13
1998	0.18
1999	0.12

Table P3. Exploitation indices (catch/NEFSC autumn survey biomass index) for Southern New England – Mid-Atlantic Bight windowpane flounder during 1975-1999.

Year	Exploitation Index
1975	4.76
1976	1.58
1977	1.21
1978	1.67
1979	0.83
1980	2.08
1981	1.70
1982	0.75
1983	2.17
1984	4.40
1985	3.34
1986	2.45
1987	2.02
1988	2.76
1989	12.18
1990	4.92
1991	2.02
1992	3.24
1993	15.14
1994	0.89
1995	0.50
1996	0.76
1997	0.84
1998	0.68
1999	1.00

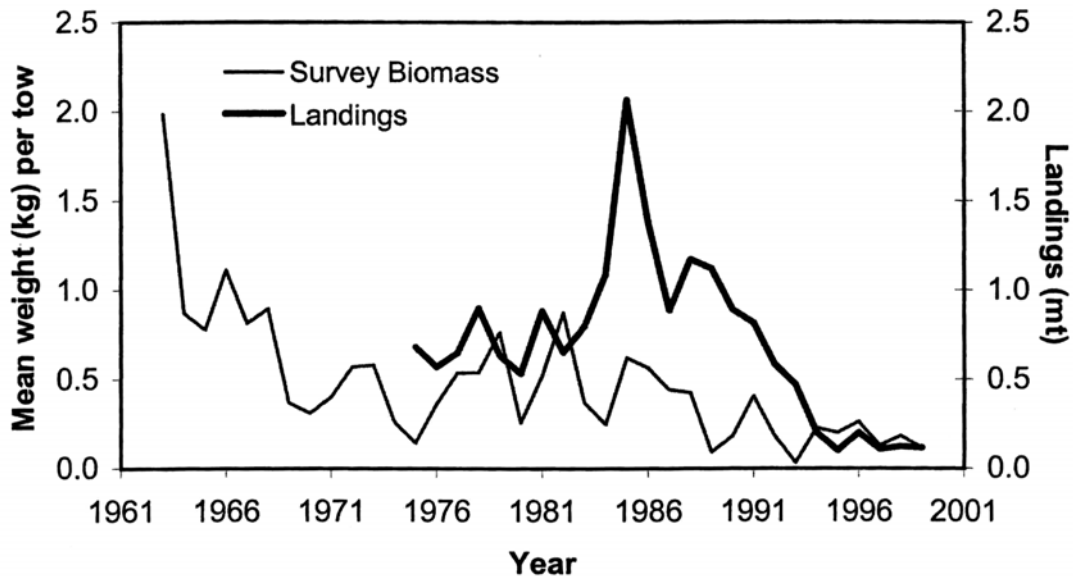


Figure P1. Commercial landings of SNE-MAB windowpane flounder, during 1975-1999, and NEFSC autumn bottom trawl survey stratified mean weight (kg) per tow in 1963-1999.

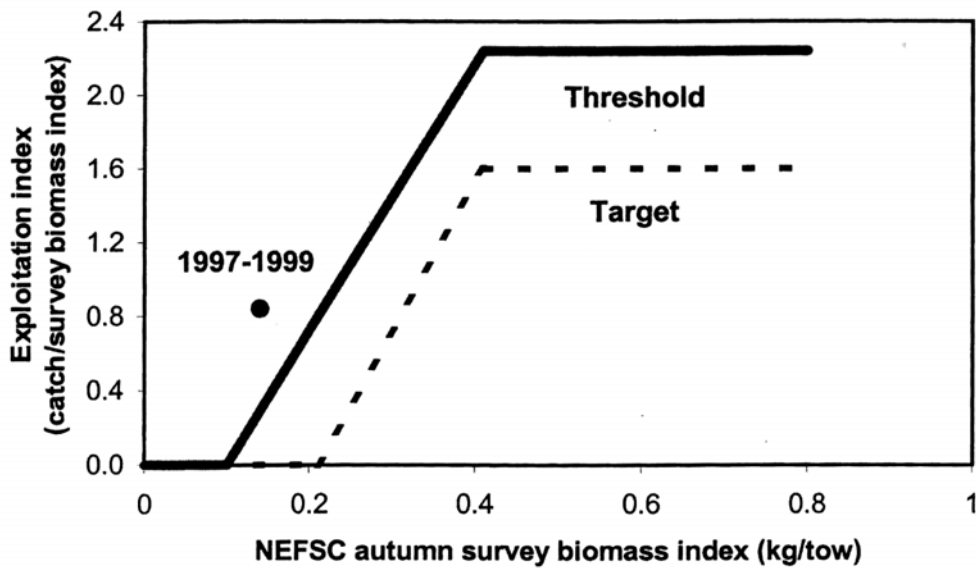


Figure P2. Harvest control rule for SNE-MAB windowpane flounder based on survey equivalents of MSY-based reference points and the 1997-1999 mean exploitation index.

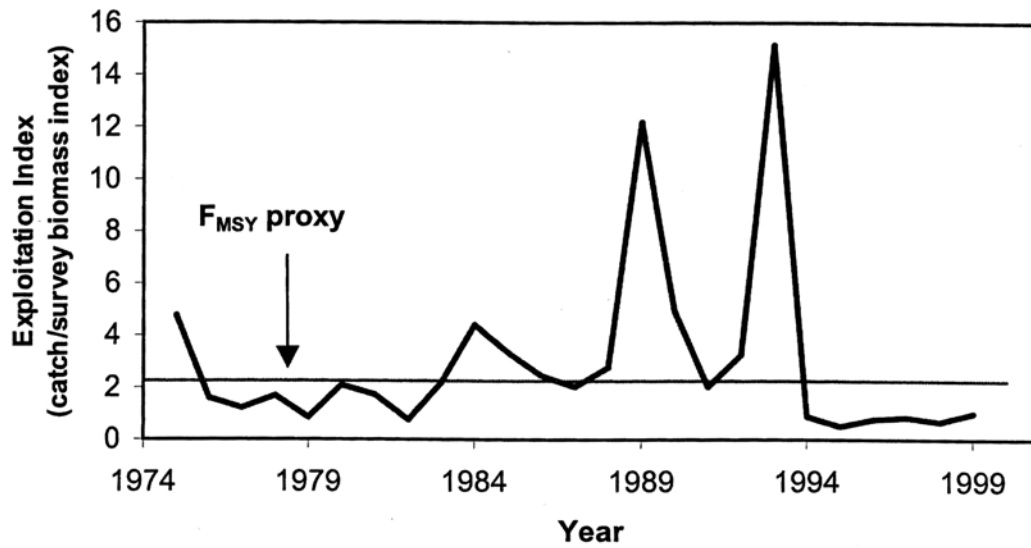


Figure P3. Trends in SNE-MAB windowpane flounder exploitation indices (catch/autumn survey biomass index), during 1975-1999, in relation to the harvest control rule  $F_{MSY}$  proxy (= 2.24).