

O. Gulf of Maine -Georges Bank 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 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 northern windowpane flounder stock, which includes the Gulf of Maine and Georges Bank 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

Since 1975, when landings of this species were first recorded, the majority of the total landings have been harvested from the Gulf of Maine-Georges Bank stock. Following a 1991 record high of 2,900 mt, landings declined to 300 mt in 1994. Landings have also been declining since 1996 and reached a record low of 46 mt in 1999 (Table O1; Figure O1). High landings during the early 1990s probably reflect an expansion of the fishery to offshore areas, as well as the targeting of windowpane flounder as an alternative to depleted groundfish stocks.

Research Survey Indices

Stratified mean weight (kg) per tow and mean number per tow of windowpane flounder from the NEFSC autumn (October 1963-1999) bottom trawl surveys are presented in Table 2 for the Gulf of Maine-Georges Bank stock. These biomass indices are also shown in relation to the stock landings in Figure 1. Survey biomass indices are highly variable, but in general, show an increasing trend since 1991. The large increase in the 1998 survey index is primarily attributable to a large catch of windowpane at one station.

3.0 Harvest Control Rule

The MSY-based control rule for GOM-GB 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 1,000 mt. The threshold F is defined as an FMSY proxy ($FMSY = 1.11$) when the NEFSC autumn survey index is greater than 0.94 kg/tow (minimum biomass threshold equal to a BMSY proxy) and declines linearly to zero at 50% of

the BMSY proxy (= 0.47 kg/tow). The target exploitation index is defined as 60% of the F MSY proxy (= 0.67) when the autumn survey index is greater than 0.94 kg/tow and declines linearly to zero at 0.47 kg/tow (Figure O2).

Exploitation indices (catch/NEFSC autumn survey biomass index) during 1975-1999 are presented, in Table O3 and Figure O3, in relation to the harvest control rule FMSY proxy (=1.11). The 1997-1999 autumn survey mean biomass index equals 0.94 kg/tow and the 1997-1999 mean exploitation index (catch/NEFSC autumn survey biomass index) equals 0.42.

4.0 Sources of Uncertainty

- Stock structure is uncertain.
- Discarding is not quantified and may a significant fraction of the catch given recent roundfish 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 O1. Landings (mt) of Gulf of Maine-Georges Bank windowpane flounder from 1975-1999. Includes Statistical Areas beginning with 51 and 52 except 526, 530-539 and 541.

Year	Landings (mt)
1975	1300
1976	1516
1977	1099
1978	923
1979	856
1980	408
1981	413
1982	411
1983	460
1984	743
1985	2141
1986	1842
1987	1396
1988	1377
1989	1577
1990	1078
1991	2862
1992	1519
1993	1212
1994	300
*1995	700
1996	700
1997	418
1998	396
1999	46

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

Table O2. Standardized, stratified biomass (mean kg/tow) indices for Gulf of Maine-Georges Bank windowpane flounder from the NEFSC autumn research vessel bottom trawl surveys during 1963-1999. Survey strata included were offshore strata 13-29 and 37- 40.

Year	Survey Biomass
1963	0.24
1964	0.10
1965	0.17
1966	0.48
1967	0.52
1968	0.26
1969	0.64
1970	0.19
1971	0.16
1972	0.57
1973	1.53
1974	0.82
1975	0.39
1976	1.17
1977	1.56
1978	1.15
1979	0.73
1980	0.63
1981	0.79
1982	0.49
1983	0.55
1984	2.14
1985	0.94
1986	1.11
1987	0.65
1988	0.65
1989	0.41
1990	1.13
1991	0.17
1992	0.38
1993	0.62
1994	0.31
1995	0.80
1996	0.50
1997	0.43
1998	1.66
1999	0.73

Table O3. Exploitation indices (catch/NEFSC autumn survey biomass index) for Gulf of Maine-Georges Bank windowpane flounder during 1975-1999.

Year	Exploitation Index
1975	3.38
1976	1.30
1977	0.71
1978	0.80
1979	1.18
1980	0.65
1981	0.52
1982	0.83
1983	0.84
1984	0.35
1985	2.29
1986	1.67
1987	2.16
1988	2.12
1989	3.81
1990	0.96
1991	16.74
1992	4.01
1993	1.96
1994	0.97
1995	0.87
1996	1.40
1997	0.96
1998	0.24
1999	0.06

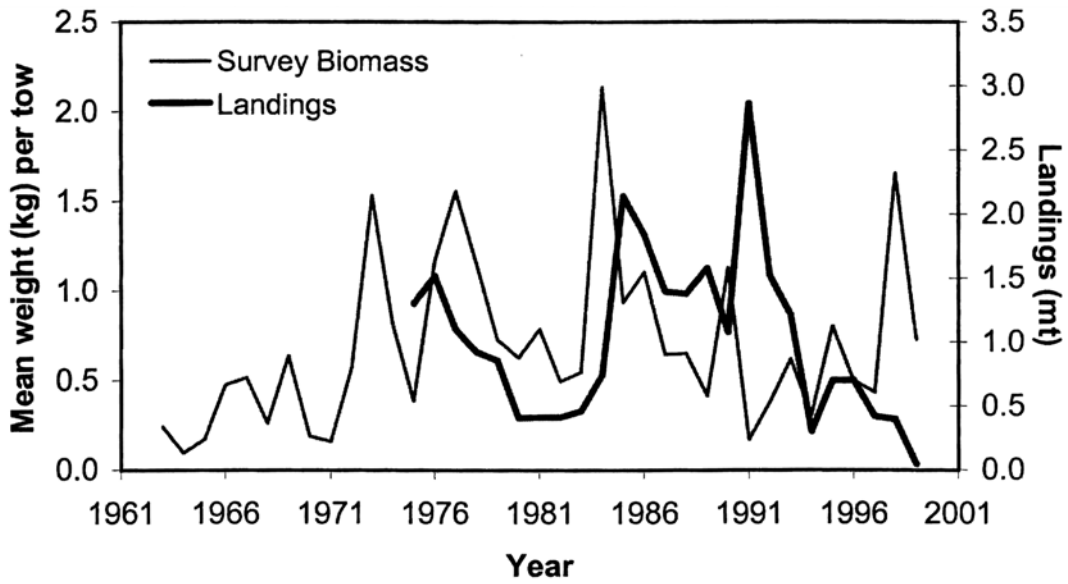


Figure O1. Commercial landings of GOM-GB windowpane flounder, during 1975-1999, and NEFSC autumn bottom trawl survey stratified mean weight (kg) per tow in 1963-1999.

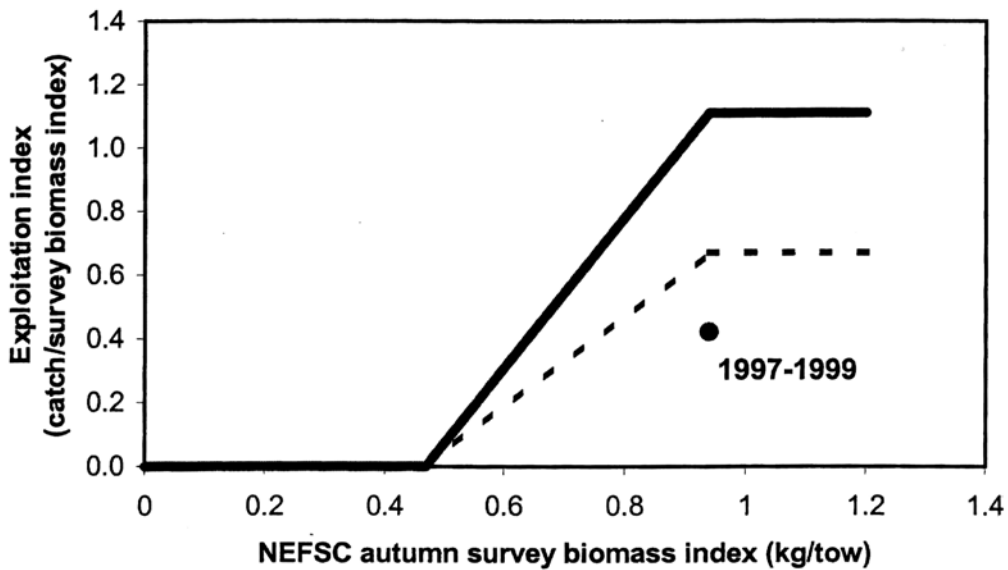


Figure O2. Harvest control rule for GOM-GB windowpane flounder based on survey equivalents of MSY-based reference points and the 1997-1999 mean exploitation index.

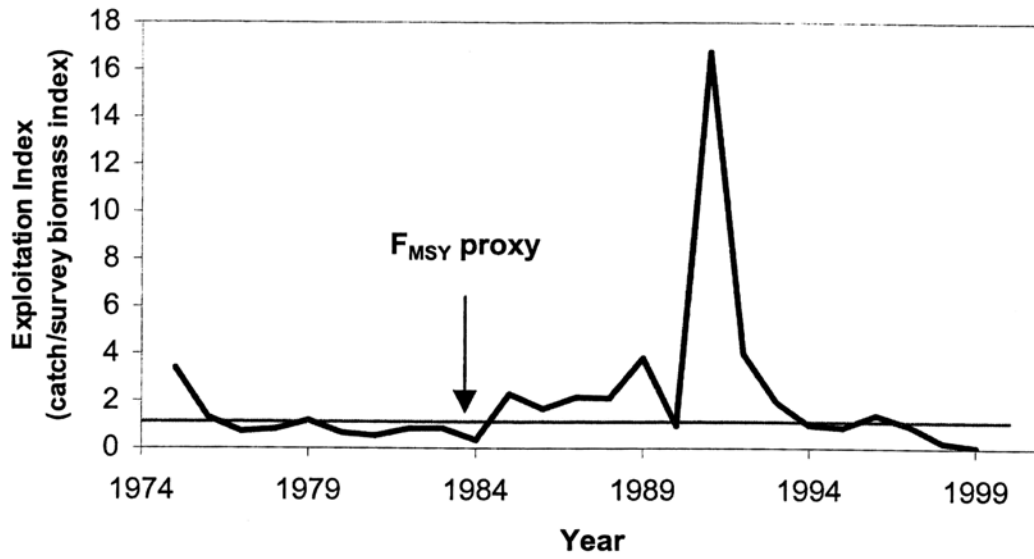


Figure O3. Trends in GOM-GB windowpane flounder exploitation indices (catch/autumn survey biomass index), during 1975-1999, in relation to the harvest control rule F_{MSY} proxy (= 1.11).