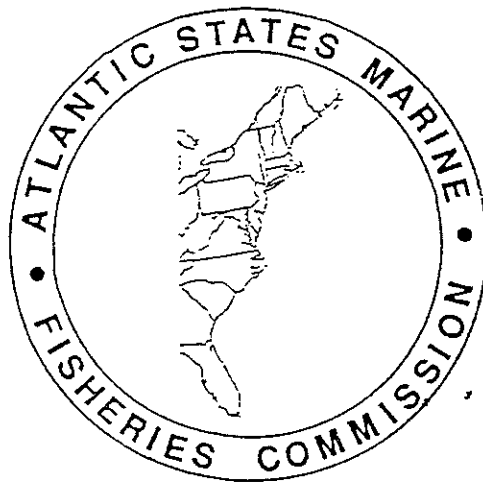


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Atlantic States Marine Fisheries Commission

**STOCK ASSESSMENT UPDATE AND OVERVIEW OF INTERSTATE FISHERY
MANAGEMENT ACTIVITIES FOR INSHORE STOCKS OF WINTER FLOUNDER
(*Pseudopleuronectes americanus*)**



December, 1993

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(Pseudopleuronectes americanus)

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The Atlantic States Marine Fisheries Commission
Winter Flounder Technical Committee

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Preface

This report presents a summary of state and federal data submitted to, and discussed by the Commission's Winter Flounder Technical Committee in development and monitoring of an interjurisdictional fishery management plan for this species. Major funding for this project was provided through a grant agreement (grant no. 14-48-0009-93-1256) between the Atlantic States Marine Fisheries Commission and the U.S. Fish and Wildlife Service Federal Aid in Sport Fish Restoration Program.



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Introduction

The Interstate Fishery Management Plan for Inshore Stocks of Winter Flounder was adopted by the Commission in May, 1992. The plan sets forth a management scenario intended to rebuild spawning stock abundance over a seven-year period. Major objectives of the plan are to: 1) maintain winter flounder stocks in sufficient abundance to support stable, productive commercial and recreational fisheries; 2) preserve, maintain, and enhance habitat and environmental quality necessary for optimal growth and reproduction; 3) to the extent possible, minimize incompatibility in management practices between this and other northwest Atlantic management plans, recognizing that winter flounder stocks vary biologically and may justify differing strategies; and 4) to the extent possible, minimize conflicts between competing uses of the winter flounder resource.

The Plan recommends habitat protection and enhancement measures including: focusing research on quantifying mortality associated with habitat loss and alteration, contamination by toxics and power plant entrainment and impingement; assure that Clean Water Act (Section 319) Plans are developed; strengthen enforcement of sewage discharge permit limits; implement effective oil and chemical spill prevention and control programs; establish and enforce "No discharge" zones; establish time-frames for dredging projects; assist industrial siting councils in siting new power plants to avoid winter flounder concentration areas; identify sediments sufficiently contaminated to impose documentable impacts on winter flounder resources and develop remediation or pollution prevention programs for such areas.

The designated management unit for the plan includes the state waters of Maine through Delaware. States declaring an interest in the Plan include; Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Delaware. Senior state administrators (Directors of state marine fisheries programs) and representatives from the Legislators and Governors' Appointees, the National Marine fisheries Service and the U.S. Fish and Wildlife Service serve as board members of the Winter Flounder Fishery Management Board. These state and federal agencies provide staff from their respective programs to participate on the Winter Flounder Technical Committee (membership listed in Appendix A). The Winter Flounder Technical Committee was established in 1989 to collect stock assessment data for preparation of the 1992 plan. The Committee was reorganized in 1993 to update the stock assessment and review individual state plans to meet the target fishing mortality rates established in the plan

Coincident with approval of the plan in May 1992, a moderately strong year class was produced. It is the sole good year class formed since 1988. However, given current high rates of exploitation, not many fish of the 1988 year class remain in the stock. The Winter Flounder Board operating through the cooperative efforts of the Commission's Interstate Fisheries Management Program (ISFMP), actively is considering ways to conserve the 1992 year class and rebuild spawning stock biomass. Decisions of the Board are predicated on data and recommendations supplied by the technical committee. This report includes updated stock assessment information compiled and reviewed by the Commission's Winter Flounder Technical Committee.

Status of Stocks

The geographic distribution of winter flounder includes nearshore habitats to offshore fishing banks along the Atlantic coast of north America. The northernmost geographic limit is Ungava Bay, Labrador. Winter flounder are one of the most common demersal fishes in inshore regions from the northern shore of the Gulf of St. Lawrence, and south to New Jersey. Smaller populations extend to Chesapeake Bay. Egg, larval, juvenile, and adult winter flounder populations have been mapped in several estuaries along the Atlantic coastline.

The annual spawning period for winter flounder varies over its geographic range. Although spawning periods overlap considerably, peak spawning times are earlier in southern locations. Nursery habitat for winter flounder larvae and juveniles include littoral and sublittoral saltwater coves, coastal salt ponds, estuaries, and protected embayments. Larvae and juveniles have also been found in open oceans areas such Georges Bank and Nantucket shoals.

Winter flounder spawn during winter and early spring producing demersal-adhesive eggs. Based on coastal New Jersey ichthyoplankton surveys, winter spawning occurs from January-March when bottom water temperatures range from 1-10°C and bottom salinities range from 14-32 ppt. These are within reported ranges of salinity and temperature noted in New England where spawning may occur into May. The demersal and adhesive quality of winter flounder eggs facilitates retention within spawning grounds.

While most winter flounder populations are primarily found estuarine and nearshore habitats, they also utilize offshore waters. The clearest example of this situation is the self-sustaining Georges Bank stock. Larval surveys in the coastal waters off the mid-Atlantic Bight suggest spawning may occur in offshore southern waters. Trawl

surveys conducted in coastal waters within state jurisdiction in Massachusetts and Connecticut routinely capture young-of-year (YOY) winter flounder, although whether or not spawning occurs offshore is uncertain. Although it is difficult to define such peripheral nursery habitats, the limited information from these surveys demonstrates that YOY flounder utilize deeper water habitats to some extent, primarily 30-60 feet, but extending to greater than 90 feet.

Three inshore Management Units are identified: **Gulf of Maine (GOM)** - waters north of Cape Cod; **Southern New England (SNE)** - Massachusetts waters east and south of the Cape, Rhode Island waters and Long Island Sound (LIS) east of the Connecticut River including Fishers Island Sound; and **mid-Atlantic (MA)** - waters west of the Connecticut River through Orient Pt to Montauk, NY including western LIS, Gardiners and Peconic Bays and the waters south and west of Montauk Pt to the Delaware-Maryland border.

Exploitation is high in all three areas, with recent fishing rates (median values through 1991) of $F=0.99$, 1.06 and 1.07 for SNE, MA and GOM respectively. Initial estimates of F in 1992 range between $F=0.95$ - 1.25 in SNE (Mass, RI, CT surveys), from $F=0.6$ - 1.25 in MA (CT, NY, NJ surveys), and are estimated to be $F=1.25$ for the GOM stock unit (Mass survey). A single natural mortality rate ($M=0.35$) is used for the three stocks.

Fishery independent surveys show no apparent trend in abundance for the GOM (Mass Survey). Abundance has generally declined in SNE since the late 1970's (RI and Mass surveys), however the NMFS inshore index of age 3+ abundance showed no clear trend. Abundance indices in the mid-Atlantic also show a general decline. The CT Survey (LIS) index of adults (age 3+) declined during 1984-86, then gradually increased to a time series high in 1990 before declining rapidly to a record low in 1992. Periodic surveys in Delaware estuaries show winter

flounder abundance declined between the 1966-70 period and the 1980-81 surveys, and no winter flounder were taken in recent Delaware trawl surveys.

Fishery Activities

Coastwide commercial landings declined from 31 million lb in 1981 to a recent historic low level of 13 million lb in 1989 before increasing slightly to 15 million lb in 1991 (Table 1). Commercial landings are dominated by the EEZ, comprising on average (1979-91) 77% of the total even with Georges Bank (GB) excluded. During the most recent three years, the proportion of landings coming from the EEZ (excluding GB) has increased to 82%.

Recreational catches (ME-DE) account for 36% of total landings (excluding GB), however proportions vary among stock units (Table 2). The majority of landings in the mid-Atlantic unit are attributed to recreational fishermen, whereas Southern New England unit landings are dominated by the commercial fishery. Recreational landings in the three areas have declined in recent years from 18.6 million lb (1984) to 3.4 million lb in 1989.

Research and Monitoring Activities

Several states (MA, RI, CT, NJ, DE) and NMFS conduct trawl surveys in which winter flounder are taken. Indices of abundance are produced from all surveys, and age and growth data are collected in most. New Jersey has been developing current age, growth and maturity information in the southern region of the MA stock complex. One year of age information has been collected from the trawl survey, and efforts are underway to develop reliable age keys for earlier years.

The ASMFC winter flounder Technical Committee met June 1-2, 1993 to review new data and to standardize methods for quantifying measures for compliance with the Plan target of F_{30} which states must implement by Jan 1, 1995. The Committee met again in August to review each states proposed management strategy for achieving F_{30} . The Committee previously agreed that, as a first step in reaching F_{30} , a 12 inch minimum size and a mesh size appropriate for groundfish management (preferably 5.5 in.) be implemented by all states. Currently, measures being considered to directly reduce fishing mortality on the fully recruited sizes include season, area and night closures and/or bag and trip limits. Future assessments may include development of a VPA in order to develop advice on total removals for at least the SNE stock unit.

Management Activities

The Plan calls for harvest control strategies which will achieve the target management reference point (F_{40}) in three steps. Currently all states are required to have implemented measures to achieve F_{25} . By Jan. 1, 1995 measures to achieve F_{30} are to be in place, and by Jan. 1, 1999, the Plan requires that F_{40} be achieved.

With current regulations including minimum fish and mesh sizes and season/area closures most states meet the F_{25} level. A recent increase in fishing mortality noted in the Connecticut Survey may indicate a need for additional conservation measures to maintain F_{25} in the area of Long Island Sound which is divided between SNE and MA management units.

The New England Fishery Management Council recently passed Amendment 5 of the Groundfish Plan which includes winter flounder.

The Plan calls for a 12" minimum size and 5.5" (S. of Cape Cod) or 6" (GOM) mesh for directed groundfish trips (>500 lb of mixed groundfish), as well as a 50% reduction in fishing effort in 10% increments over five years. However, exemptions to effort reductions (days at sea) are included for day boats (exempt from the 2:1 layover days ratio requirement) and for vessels less than approximately 45 ft (exempt from all effort reduction) which may seriously undermine the conservation of winter flounder. With 82% of recent commercial landings (excluding GB) coming from the EEZ, the success of state efforts to rebuild winter flounder spawning biomass is heavily dependent on conservation efforts in federal waters.

Table 1. Winter flounder commercial landings (thousands of pounds) by year and stock unit. (Data source: NMFS weighout data).

YR	-----State Waters-----				---Exclusive Economic Zone---				
	Gulf ME	S.New Engl.	Mid-Atl.	Total	Gulf ME	S.New Engl.	Mid-Atl.	Geo. Bank	Total
1979	951	4052	842	5846	2992	9776	891	5231	18690
1980	841	4504	1104	6451	4849	17023	700	7016	29588
1981	1095	4752	1397	7244	4985	17706	1122	7145	30958
1982	802	4293	1013	6108	5010	15160	1099	5299	26568
1983	719	3832	991	5542	4307	14242	813	7788	27150
1984	524	3835	1081	5440	3679	13719	497	7842	25737
1985	400	3295	746	4441	2797	10990	1040	4159	18986
1986	257	2440	808	3505	2209	7373	515	3495	13592
1987	269	2065	886	3220	2118	8105	591	5281	16095
1988	229	1872	1275	3376	3075	8706	547	2438	14766
1989	175	1097	595	1867	2670	8000	809	1756	13235
1990	106	708	532	1346	1055	2306	481	9633	13475
1991	98	662	455	1215	994	3220	715	10265	15194
MEAN:	569	3276	985	4822	3517	11891	784	4924	20310
%Total:				19%					81%

---PERCENTAGE OF COMMERCIAL LANDINGS---

GULF OF MAINE:	16%
S. NEW ENGLAND:	58%
MID-ATLANTIC:	7%
GEORGES BANK:	19%

Table 2. Ten year mean of commercial and recreational landings (thousands of pounds) by stock unit, 1979-1988.

<u>STOCK UNIT</u>					
Location	Recreational	Commercial		Ratio Rec:Com	% Total
		State ¹	EEZ ²		
Gulf of Maine	3232	609	3602	44:56	21.7
S. New England	1845	3494	12280	11:89	51.4
Mid-Atlantic	7377	1024	782	79:21	26.8
All Areas	12455	5127	16664	36:64	34246

¹ STATE = state waters <=3 mi

² EEZ = > 3 mi exclusive of Georges Bank

APPENDIX - A:

ASMFC WINTER FLOUNDER TECHNICAL COMMITTEE MEMBERSHIP FOR 1993

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