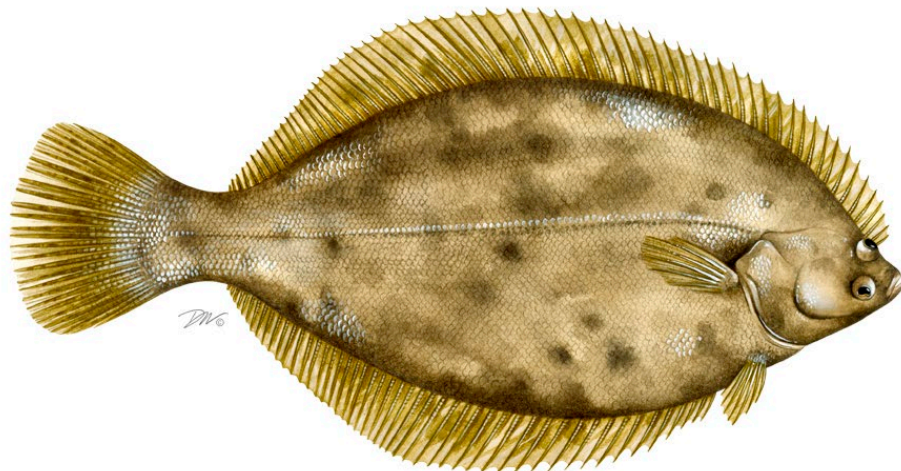


**ATLANTIC STATES MARINE FISHERIES COMMISSION**

**REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN**

**FOR WINTER FLOUNDER**  
*(Pseudopleuronectes americanus)*

**2022 FISHING YEAR**



Prepared by the Plan Review Team  
Approved February 2024



*Sustainable and Cooperative Management of Atlantic Coastal Fisheries*

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## I. Status of Fishery Management Plan

<u>Date of FMP Approval</u>	Original FMP (October 1988)
<u>Amendments</u>	Amendment 1 (November 2005)
<u>Addenda</u>	Addendum I (May 1992) Addendum II (February 1998) Addendum I to Amendment 1 (May 2009) Addendum II to Amendment 1 (October 2012) Addendum III to Amendment 1 (May 2013)
<u>Management Units</u>	Three stocks units: Gulf of Maine (GOM), Southern New England/ Mid-Atlantic (SNE/MA), and Georges Bank (GBK). Commission participates in management of GOM and SNE/MA stocks.
<u>States with Declared Interest</u>	Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey
<u>Active Boards/Committees</u>	Winter Flounder Management Board, Advisory Panel, Technical Committee, Plan Review Team

The Atlantic States Marine Fisheries Commission (Commission) and the New England Fishery Management Council (Council) manage winter flounder in state and federal waters. The Commission participates in the management of two inshore winter flounder stocks: 1) the Gulf of Maine (GOM) stock, which consists of waters north of Cape Cod; and 2) the Southern New England/Mid-Atlantic (SNE/MA) stock, which consists of waters south of Cape Cod to the Delaware-Maryland border. The decision to consider only inshore stocks of winter flounder was based upon the Commission's focus on fisheries in state waters, and the differences in biological characteristics from the offshore stock in Georges Bank.

### **Interstate Fishery Management Plan (1988)**

The Commission authorized development of the first Fishery Management Plan (FMP) for Winter Flounder (*Pseudopleuronectes americanus*) in October 1988. The purpose of the plan was to: 1) address management of inshore stocks of winter flounder; and 2) prominently consider habitat and environmental quality as factors affecting the condition of the resource. The original FMP and Addendum I called for reductions in fishing mortality on winter flounder. It allowed states the flexibility to achieve those reductions based on the life history characteristics of the particular stocks inhabiting each region. Implementation of the plan required cooperation between state fishery management agencies, NOAA Fisheries, the Council, and the Commission.

Although all states submitted plans that were approved by the Winter Flounder Management Board (Board), results from a 1995 stock assessment concluded that none of the states achieved a fishing mortality rate corresponding to  $F_{30}$ . Subsequent analyses in early January 1997 indicated that fishing mortality on a coastwide basis was slightly higher than the  $F_{30}$  target for the SNE/MA stock complex. Fishing mortality in the GOM stock was presumed to be higher than in the SNE/MA stock, and the spawning stock biomass was estimated to be at a low level, indicating that the GOM unit might be in greater need of rebuilding than the SNE/MA unit.

In February 1998, the Board approved Addendum II to the FMP. Addendum II adjusted the implementation schedule for management measures by the participating states and called for plans to reach the target fishing mortality goal for rebuilding ( $F_{40}$ ).

### **Amendment 1 (2005)**

In May 1999, the Board acknowledged that it was necessary to update the Interstate FMP for Inshore Stocks of Winter Flounder through an amendment. The original plan and addenda did not prove successful in rebuilding inshore winter flounder populations. In addition, the FMP did not reflect the goals and objectives of the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA), which was established in 1993 after the original FMP was approved. The Board further noted that an upcoming stock assessment would likely provide new information on the status of winter flounder stock complexes. After the assessment was completed in late 2002, the Commission began development of Amendment 1 in February 2003.

Amendment 1 to the Interstate FMP for Inshore Stocks of Winter Flounder, approved in November 2005, replaced all previous Commission management plans. It focused on joint management of winter flounder between the Commission and Council, and was designed to rebuild and maintain spawning stock biomass at or near target biomass levels. In addition, Amendment 1 prioritized restoration and maintenance of essential winter flounder habitat.

Amendment I required a minimum size limit of 12 inches for commercial and recreational fisheries for both GOM and SNE/MA stock units. Recreational creel limits were ten (10) fish in the SNE/MA stock area and eight (8) fish in the GOM. There were no required closed recreational seasons in the GOM, while a closed season of 20 days during March and April was required in SNE/MA. The 60-day open season for recreational winter flounder fishing could be split into no more than 2 blocks. States were required to implement a minimum size of 6.5 inches square or diamond mesh for the cod-end in both GOM and SNE/MA inshore waters. Additionally, a 100-pound trip limit was required if smaller mesh was being used in the SNE/MA. This “mesh trigger” was intended for the landing of a small amount of winter flounder as bycatch in small-mesh fisheries.

### ***Addendum I to Amendment 1 (2009)***

Addendum I was approved in May 2009, following the 2008 GARM III stock assessment which indicated that the SNE/MA spawning stock biomass was only 9% of the target and the GOM stock was likely to be overfished and experiencing overfishing. For the GOM commercial

fishery, Addendum I established a maximum possession limit of 250 pounds per vessel. This limit was estimated to reduce 2006-2007 harvest levels by 31% for state water fishing vessels. For the GOM recreational fishery, Addendum I required states to implement regulations to reduce fishing mortality by 11% from the average of 2006-2007 levels. This 11% reduction was estimated to reach  $F_{MSY}$ . States were allowed to achieve reductions through possession limits, seasons, or a combination of both, and also had the option to submit conservation equivalency proposals to achieve the necessary reductions through alternative management measures, subject to approval by the Board.

For SNE/MA, Addendum I's management measures were designed to reach the lowest fishing mortality (F) rate possible with minimal economic and social impacts. The Addendum also sought to reduce dead discards and prevent an influx of effort into state waters. Non-federally permitted commercial vessels were allowed to possess a maximum of 50 pounds of winter flounder. This F rate was projected to reduce harvest by 65%, and was intended solely to allow for bycatch. Recreational fishermen were permitted to possess a maximum of two (2) winter flounder from inshore waters of the SNE/MA stock area. This bag limit was established with the expectation that it would reduce harvest by 46%.

### ***Addendum II to Amendment 1 (2012)***

In response to updated stock status information and federal action to substantially increase the GOM winter flounder state waters subcomponent, the Board initiated Addendum II to Amendment 1 of the Winter Flounder Interstate FMP. This Addendum changed commercial and recreational management measures for the state waters component of the GOM stock only. Specifically, it increased the maximum possession limit for non-federally permitted commercial vessels to 500 pounds. It also removed the 11% reduction in F for the recreational fishery and allowed states the option to open their recreational fishing season year-round.

### ***Addendum III to Amendment 1 (2013)***

Addendum III established an annual specification process to set commercial and recreational management measures for the GOM and SNE/MA fisheries. Each year, with advice from the Winter Flounder Technical Committee, the Board can adjust trip limits, size limits, and seasons for the commercial fishery; the Board can also adjust size limits, bag limits, and seasons for the recreational fishery. The Addendum enables the Commission to quickly respond to federal actions and changes in the winter flounder fishery.

## **II. Status of Stocks**

The most recent peer reviewed stock assessment for all three winter flounder stocks was conducted by the Northeast Fisheries Science Center in 2022. These management track stock assessments included data through 2021.

## **Gulf of Maine**

The 2022 management track stock assessment determined that GOM winter flounder stock biomass status is unknown and overfishing is not occurring. 2021 biomass (30+ cm) was estimated to be 5,093 metric tons (mt) and the exploitation rate was estimated to be 0.033, which was 14% of the overfishing exploitation threshold proxy (Figures 1 & 2). The assessment noted that there have been significant declines in commercial and recreational removals since the 1980's; as catches continue to remain far below the overfishing level, the general lack of a response in survey indices and age/size structure has been a primary source of concern. However, there were increases in the fall 2021 and spring 2021 and 2022 area swept biomass estimates. If increasing biomass trends continue, then this may be the beginning of a response to the time series lows in removals. Significant sources of uncertainty include gear catchability and that biomass-based reference points cannot be determined. This 2022 assessment update did however incorporate a re-estimated catchability based on a sweep study for the NEFSC survey. (Source: [Gulf of Maine Winter Flounder 2022 Assessment Update](#))

## **Southern New England/Mid-Atlantic**

The SNE/MA management track assessment indicates the stock not overfished and overfishing is not occurring. The stock is now considered rebuilt by the 2023 deadline. Spawning stock biomass has been relatively stable, but low, since 2016, with an estimated 3,353 mt in 2021 (Figure 3). The current SSB is 101% of the biomass target and 202% of the biomass threshold (Figure 4). Recruitment, an important indicator of the stock's ability to rebuild, has declined sharply since the 1980s and remains near the time series low (Figure 5). Based on a recommendation made during the previous assessment update, the recruitment stanza was changed to use only the last 20 years of recruitment estimates instead of the entire time series to make projections. The current stock size and productivity mean many of the historic recruitment estimates are near to impossible to achieve, making the adjusted recruitment stanza more realistic. The lower median recruitment estimate from this shortened recruitment stanza in the long term biological reference point projection results in a much lower SSB value for the SSB at maximum sustainable yield reference point. While stock status has changed, the perception of the stock has not, and model results, continued low harvest, and fishery independent survey indices all reveal a poor stock condition for SNE/MA winter flounder. (Source: [Southern New England/Mid-Atlantic Winter Flounder 2022 Assessment Update](#))

### **III. Status of the Fishery**

#### **Stockwide**

Across all stocks (GOM, SNE/MA, and GBK), the winter flounder fisheries are a fraction of their historic productivity. Specifically, commercial and recreational landings have declined since the early 1980s (Table 1, Figure 6). Landings are reported for the 2022 calendar year unless otherwise stated.

**Commercial landings** peaked at 18,279 mt (40.3 million lbs) in 1981, the highest since 1950, but have generally declined throughout the 1990's and 2000's. In 2022, commercial landings were

314.1 mt (0.69 million lbs), a 30% decline from 2021 landings of 449.7 mt (0.99 million lbs). A majority of the landings were taken in Massachusetts (93.7%; Table 2). It is important to note that management action has impacted yearly landings as annual catch limits increased in 2011 and 2012, and a moratorium was in place for the SNE/MA stock between May 2009 and April 2013. (Landings source: NMFS, State Compliance Reports)

**Recreational harvest** was 81.1 mt (178,908 lbs) in 2022, a 59% increase from 2021 harvest of 51.1 mt (113,000 lbs) (Table 1). These recent recreational harvest values represent a significant decrease from the 17,535 mt (38,658,240 lbs) caught in 1981. In 2022, Massachusetts comprised the majority of coastwide recreational winter flounder landings, at 94.7%. Generally, the percentage standard error (PSE) values around each state's recreational data are very high (>50) and indicate very imprecise estimates (Landings source: MRIP).

### **Gulf of Maine**

**Commercial landings** of GOM winter flounder have substantially declined since the early 1980s, with recent landings being roughly 10% of harvest levels in the 1980s. From 1964 through the mid-1970s, commercial landings were near 1,000 mt. Productivity peaked at nearly 2,793 mt in 1982, and has steadily declined to 141 mt in 2010, the second lowest value in the time series. For the 2022 fishing year (May 1, 2022 – April 30, 2023), commercial landings in the GOM winter flounder stock were 94.9 mt, of which 23.7 mt were landed in state waters (Source: NEFSC 2023). The 2022 estimate for total commercial discards is 7.8 mt (Source: NMFS).

**Recreational landings** have declined significantly since their peak in the 1980s. During the 2022 fishing year, the estimate for recreational harvest in the GOM was 39.5 mt. Recreational dead discards make up a small portion of catch and were estimated at 1.3 mt for the 2022 fishing year (NEFSC 2023).

### **Southern New England/Mid-Atlantic**

**Commercial landings** of SNE/MA winter flounder generally declined throughout the time series from 1964 to 2021, with periodic peaks and dips. After reaching a historical peak of 11,977 mt in 1966 and then declining through the 1970s, total U.S. commercial landings again peaked at 11,176 mt in 1981. After 1981, SNE/MA commercial landings declined to 2,159 mt in 1994 and then increased to 4,672 mt in 2001. Commercial landings have generally decreased since the 2001 peak, and were just 134 mt in 2012 (in part due to the zero possession limit in federal waters). Landings in the 2022 fishing year (as opposed to calendar year) were 86.4 mt, of which 4.0 mt were landed in state waters (Source: NMFS). 2022 total commercial discard estimates were 99.7 mt (Source: NMFS).

**Recreational landings** of SNE/MA winter flounder peaked in 1984 and have declined substantially since. During the 2022 fishing year, the estimate for recreational harvest in the SNE/MA stock was 32.5 mt. Recreational discards in the 2022 fishing year were estimated at 4.4 mt (NEFSC 2022). The principal mode of fishing is private/rental boats, with most recreational landings occurring during May and June (Source: MRIP).

#### **IV. Status of Research and Monitoring**

Amendment 1 to the Interstate Fishery Management Plan for Winter Flounder requires the following research and monitoring activities by certain states:

- Massachusetts, Rhode Island, and New York are required to conduct annual surveys of juvenile recruitment to develop an annual juvenile abundance index.
- Massachusetts, Rhode Island, Connecticut, and New Jersey are required to conduct annual trawl surveys to develop an index of spawning stock biomass.

In 2022, states with a declared interest in the winter flounder FMP conducted the fisheries-independent surveys summarized below.

##### **Maine**

Maine Department of Marine Resources (MEDMR) conducts spring and fall bottom trawl surveys in cooperation with the New Hampshire Fish and Game Department (NHFG). The Maine-New Hampshire (MENH) Inshore Trawl Survey collects length, weight, maturity stage, and age samples for winter flounder. In 2022, 3,299 winter flounder were caught with 1,017 taken for maturity samples during the spring survey. In the fall survey, 4,596 winter flounder were caught, but none were taken for maturity samples. Mean weight per tow in 2022 increased by approximately 51% over 2021 fall survey observations.

##### **New Hampshire**

NHFG conducts an annual seine survey of juvenile fish in its estuaries from June through November. Winter flounder encountered in the survey during 2022 ranged in size from 2.2 to 16.2 cm total length with a mean of 5.1 cm total length. The survey produces an index of relative abundance for each species encountered using a geometric mean catch per seine haul. The 2022 index value (0.97) for winter flounder increased from 2021, but is below the average (1.12) since 1997; the index has been highly variable. In addition, NHFG has worked with MEDMR since the fall of 2000 to conduct an inshore trawl survey off of Maine and New Hampshire. Winter flounder are regularly caught in this survey.

##### **Massachusetts**

The Massachusetts Division of Marine Fisheries (MA DMF) has conducted a biannual trawl (spring and fall) survey covering MA territorial waters since 1978. Due to the COVID-19 global pandemic and associated health risks to scientists and crew, both spring and fall surveys were cancelled in 2020, but resumed sampling in 2021. Stratified mean winter flounder abundance in the Gulf of Maine (GOM) has increased since 2021 in the spring and fall. Winter flounder biomass, abundance and percent occurrence for spring in the GOM have decreased since 2021, in line with an overall decreasing trend since 2000. Fall survey indices show no trend over the period of 2000-2022. Mean weight per tow and mean abundance per tow have increased in the past year, while percent occurrence decreased. Stratified mean winter flounder abundance in



the Southern New England/Mid-Atlantic (SNE/MA) stock has decreased in the spring and increased in the fall since the last report. SNE/MA winter flounder biomass, abundance and percent occurrence show decreasing trends in spring over the period of 2000-2022. Biomass and abundance show no trend in the fall in the SNE/MA stock, but percent occurrence shows a decreasing trend.

From June 20 – July 8, 2022, MA DMF conducted the 46<sup>th</sup> Nantucket Sound Estuarine Winter Flounder Young-of-the-Year (YOY) Seine Survey. The survey covers six Nantucket Sound estuaries on the south side of Cape Cod: Great Pond, Waquoit Bay, Cotuit Bay, Lewis Bay, Bass River and Stage Harbor. 141 seine hauls were conducted at 49 Stations in 2021. The 2022 pooled (all estuaries combined) winter flounder YOY index (0.231 YOY / m<sup>2</sup>) is just above the time series median.

In addition, in 2022, MA DMF completed a 12-month environmental DNA (eDNA) sampling program in Cape Cod embayments and a Boston Harbor estuary study. The eDNA sampling program's goal is to improve our understanding of winter flounder habitat use. Samples were collected monthly starting in August from 10-13 stations in Sesuit Harbor, Wellfleet Harbor, and Pamet Harbor on Cape Cod Bay as well as Green Pond, Waquoit Bay, and the Bass River on Vineyard and Nantucket Sounds. In 2022, a total of 729 samples were collected from these systems from January-July along with environmental data (temperature, salinity, pH, turbidity). All water samples were filtered, frozen, and transported to the Gloucester Marine Genomics Institute in 2022 for DNA extraction and qPCR analysis. qPCR analyses for samples collected for this project in 2021 and early winter 2022 were completed showing positive detections during summer and winter months when peak abundance was expected for juveniles and adults, respectively.

The purpose of the Boston Harbor estuary study is to improve the understanding and identify the use of an urban coastal embayment by winter flounder through a multi-faceted approach. In 2022, 48 receivers were deployed from March through November, and 9–19 receivers were maintained in winter months. A total of 56 adult winter flounder were tagged with Innovasea V13 acoustic transmitters in April and May 2022 (adding to 95 existing tagged winter flounder from 2021). All tagging was done in the Boston Harbor estuary and fish were caught using a bottom otter trawl. Tags were programmed to last 1114 days and will allow researchers to monitor immigration, emigration, site fidelity, and movement within the estuary over a 3-year period. Additionally, as part of this study, a beam trawl survey occurred weekly from June through October in 2022 to generate indices of abundance and map spatiotemporal distribution of YOY winter flounder. Twenty-four random tows, 300 meters in length, were conducted per week. In 2022, the survey completed 468 tows in depths that ranged from 0 to 13.2 meters. Biological, genetic, and water chemistry sampling was conducted concurrent with the survey. The survey captured 4,322 YOY winter flounder. Otoliths were examined for 290 fish by DMF's Age and Growth Lab to determine hatch and spawning date.

Preliminary findings from each approach were presented at the American Fisheries Society Annual Meeting (Spokane, WA) and the NOAA Flatfish Biology Conference (Westbrook, CT) in

2022. Studies to assess adult and juvenile genetic diversity from samples collected across all methods are planned for 2024 in collaboration with University of Massachusetts Amherst.

### **Rhode Island**

Rhode Island Division of Marine Fisheries (RI DMF) conducts five surveys to monitor juvenile and adult winter flounder in its state waters; spring and fall seasonal trawl surveys, a monthly trawl survey, a Narragansett Bay juvenile finfish seine survey, a coastal pond seine survey, and a coastal pond winter flounder spawning stock survey. The seasonal demersal trawl survey samples 42 fixed and random stations in the spring and fall. The spring seasonal trawl survey had a 2022 catch per unit effort (CPUE) of 2.25 winter flounder per tow, the second lowest value in the time series and remains well below the time series median. The fall seasonal trawl survey had a low 2022 CPUE of 0.45 winter flounder per tow, the second lowest value in the time series and below the time series median. The monthly demersal trawl survey samples 13 fixed stations each month. CPUE from this survey in 2022 was 0.97 winter flounder per tow; the index remains low and well below the time series median. The Narragansett Bay juvenile finfish seine survey samples 18 stations once a month from June through October. The 2022 CPUE was 3.62 winter flounder per seine haul, which was a large decrease from 2021 and below the time series median. The coastal pond seine survey samples 24 stations in 8 coastal ponds from May through October. The 2022 survey had a CPUE of 10.75 winter flounder per seine haul, a slight decrease from 2021 and below the time series median. The coastal pond winter flounder spawning stock survey samples 6 stations with fyke nets from January to May in Point Judith and Ninigret Pond. The 2022 survey had a CPUE of 2.11 winter flounder per fyke set, which is a slight decrease from 2021 and remains below the time series median. The overall trend in winter flounder abundance for all surveys indicates a declining abundance of this species in Rhode Island waters.

### **Connecticut**

Winter flounder have been monitored through the Long Island Sound Trawl Survey (LISTS) since 1984. Spring and fall surveys are conducted each year. The 2022 LISTS spring (April-May) index (geometric mean fish/tow) for all ages of winter flounder was 1.57, the fourth lowest value in the 39-year time series (lowest previous value was 0.76 in 2017). Similarly, the 2022 spring index for age-4+ winter flounder was 0.43, the second lowest value in the time series. Connecticut Department of Energy and Environmental Protection also conducts a fall estuarine seine survey that provides an index of abundance for young-of-year winter flounder. The geometric mean fish/tow in 2022 was 0.27, the lowest value in the 35-year time series.

### **New York**

The New York State Department of Environmental Conservation has been conducting a small mesh trawl survey targeting juvenile finfish since 1987. The weekly survey runs from May through October in Peconic Bay using a small mesh sixteen-foot semi-balloon shrimp trawl. In 2022, the YOY CPUE of winter flounder from June through July was 0.61. Eight total age-1

winter flounder was caught in 2022, for a CPUE of 0.02. One age 2+ winter flounder was caught during 2022, the first since 2018.

The Department also conducts a seine survey in western Long Island bays, which has been ongoing since 1986, using a 200-foot ¼ inch mesh seine. Sampling is conducted at multiple stations twice a month within Jamaica Bay, Manhasset Bay, Little Neck Bay, Hempstead Harbor, and Oyster Bay from May through October. Winter flounder catch per seine for all ages, aggregated for all 5 bays, was 4.33 for 2022, an increase from 2021. 913 of the total 922 winter flounder caught were YOY, and 9 were age-1+.

### **New Jersey**

The Bureau of Marine Fisheries has conducted an Ocean Trawl program in nearshore ocean waters since 1988. Winter flounder are most abundant in New Jersey during April, and data from this survey cruise are used to develop an index of relative abundance in New Jersey waters. Due to the protocols in place for COVID-19, the Ocean Trawl program did not run any cruises in 2021; however, normal operations resumed in April 2022. Age structures were collected from 109 winter flounder in 2022.

## **V. Status of Management Measures and Issues**

The Winter Flounder Management Board set status quo specifications for the 2023-2025 fishing years. The recreational and commercial regulations listed in Tables 3 and 4 have remained consistent since 2014. The TC's 2018 commercial measures analysis indicates the SNE/MA region is essentially a bycatch fishery. Any further restriction in measures would likely increase regulatory discards and have a limited impact on fishing mortality. While the stock status of SNE/MA winter flounder was changed to not overfished in a 2022 management track stock assessment, the overall perception of the stock has not changed. The Board intends to continue to work collaboratively with the Council to determine the best path forward in improving understanding of the biology of the winter flounder stock and determining the right management approach for this depleted stock.

## **VI. Implementation of FMP Compliance Requirements and De Minimis**

### **De Minimis**

Amendment I allows a state to be granted *de minimis* status if their fishery constitutes less than 1% of the coastwide commercial or recreational landings for the preceding three years for which data are available. A state that qualifies for *de minimis* status based on their commercial landings will qualify for exemptions in the commercial fishery only, and a state that qualifies for *de minimis* based on their recreational landings will qualify for exemptions in their recreational fishery only. States that apply for and are granted *de minimis* status are exempted from biological monitoring/sub-sampling activities for the sector for which *de minimis* has been granted.

### **Request for *de minimis* status**

New Jersey has requested *de minimis* status for its commercial fishery. New Jersey commercial landings have remained well below 1% of coastwide landings for the years 2020-2022, which meets the *de minimis* criteria.

### **State Compliance**

All of the states with a declared interest in the management of winter flounder have implemented commercial and recreational regulations that are consistent with ASMFC's Winter Flounder FMP (Tables 3 and 4).

## **VII. Research and Monitoring Recommendations**

The 2022 Management Track Stock Assessments noted several data needs that would improve future population estimates.

### **Gulf of Maine**

- Additional studies on state survey gear efficiency
- Additional studies quantifying winter flounder abundance and distribution among habitat types, especially within estuarine environments
- Consider applying year specific catchability estimates instead of averaging the full time series
- Consider statistical approaches that overcome the imbalance between night and day tows in a stratum

### **Southern New England/Mid-Atlantic**

- Additional studies on maximum age
- Additional studies on maturity, particularly with regard to latitudinal patterns
- Investigation of localized structure/genetics of the stock
- Update and investigate migration/movement rates, using advances in tagging study design
- Incorporate environmental influences on recruitment, mortality, and/or survey catchability using state-space models
- Assess all three winter flounder stocks at the same time
- Comprehensively evaluate the spatial processes of this species
- Evaluation of alternative model structures that may be robust to patterns of biases evident in age composition fits in commercial catch data and survey time series

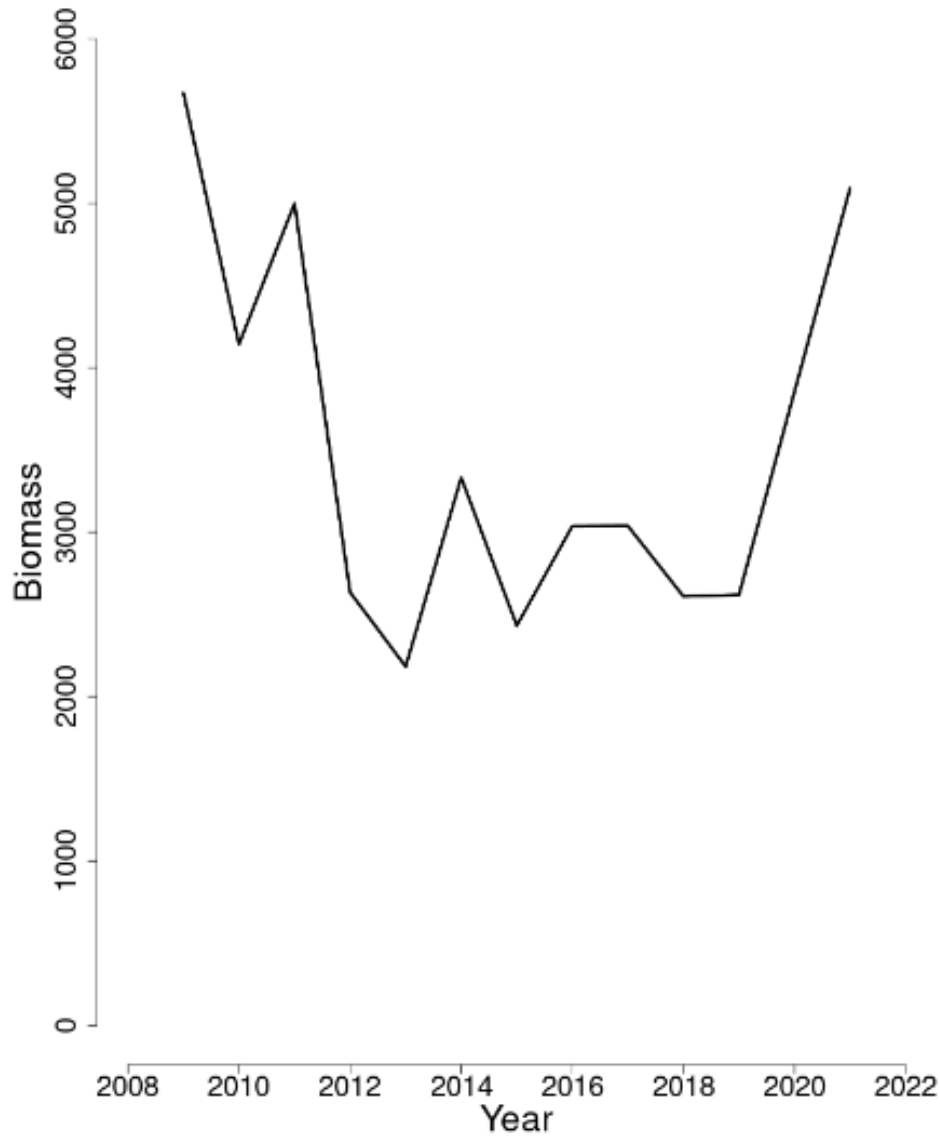
## **VIII. Plan Review Team Comments and Recommendations**

- The PRT finds that all states implemented regulations consistent with the Winter Flounder FMP.
- The PRT had no additional comments or management recommendations this year.

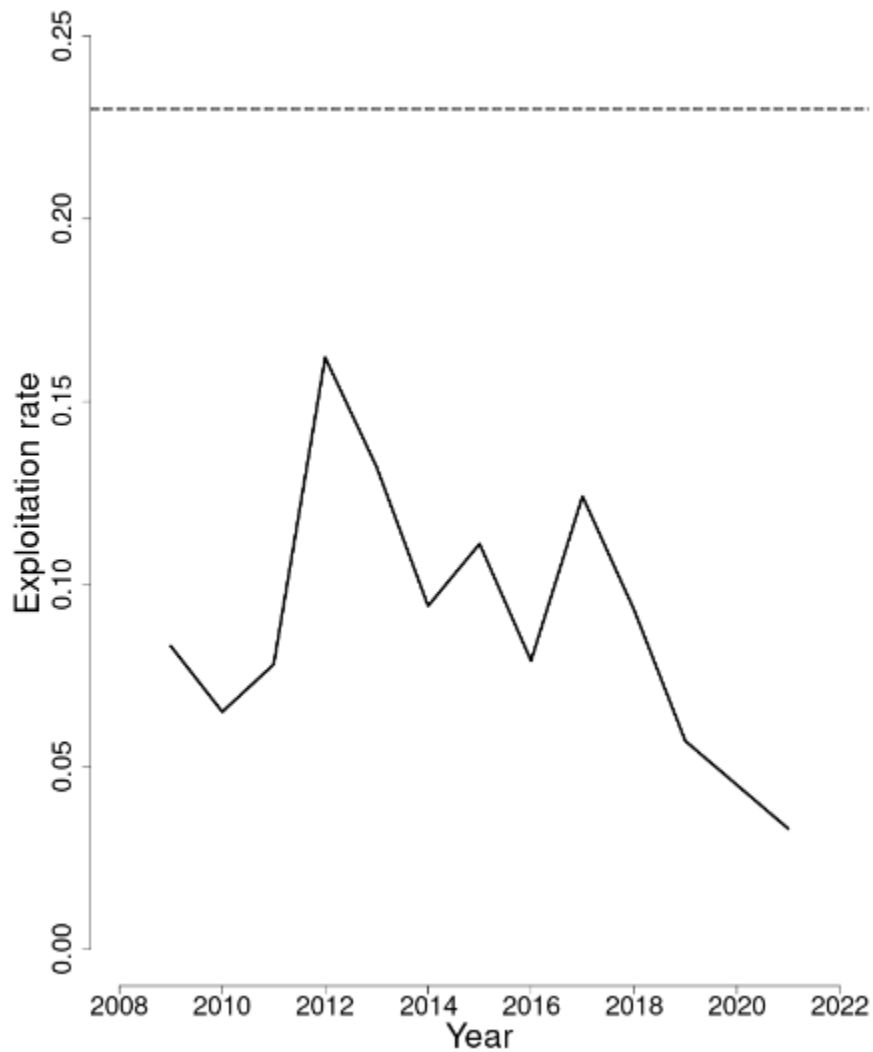
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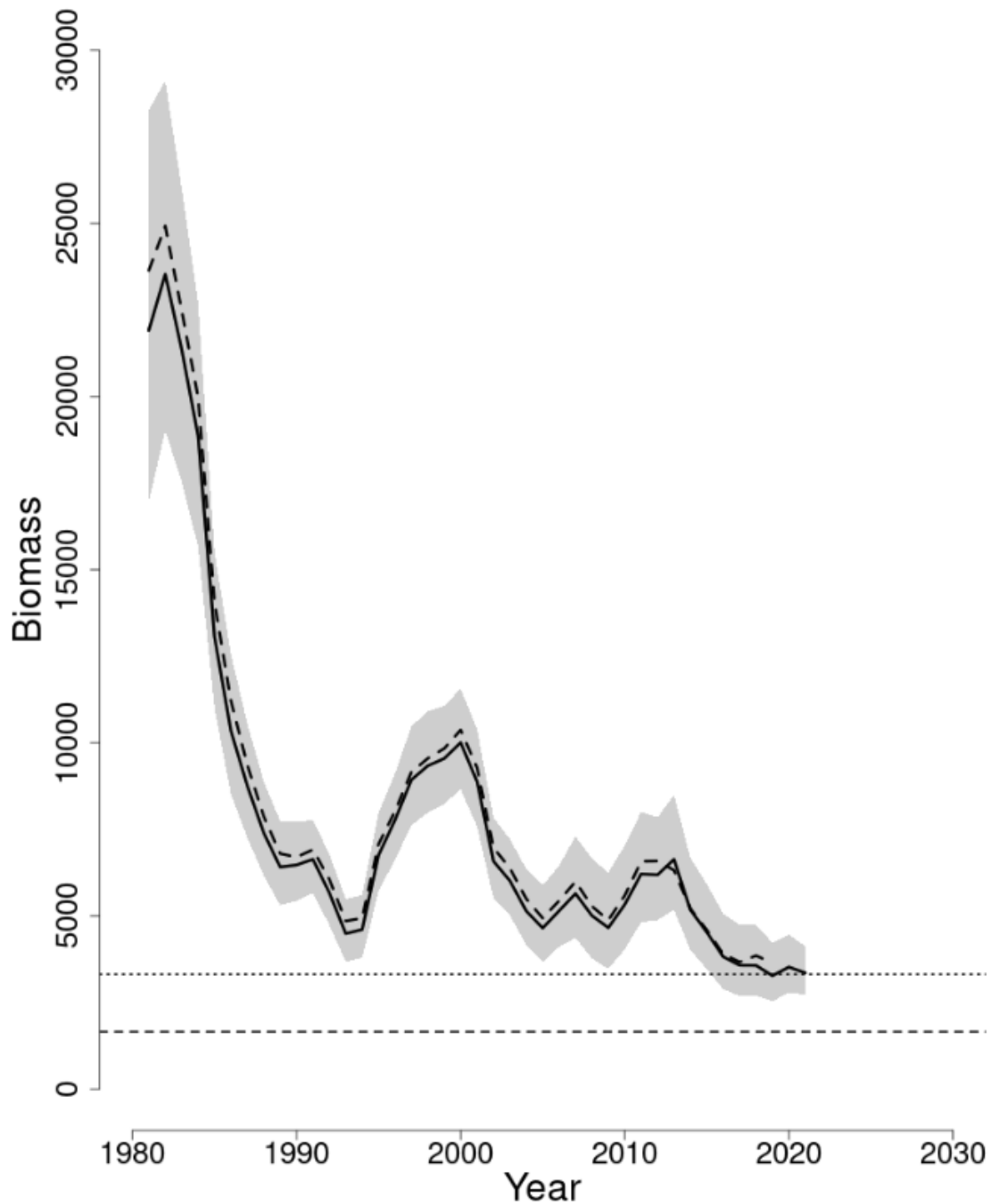
## X. Figures and Tables



**Figure 1.** Estimates of exploitable biomass (30+ cm) for Gulf of Maine winter flounder between 2009 and 2021 as estimated from the fall MENH, MDMF, and NEFSC trawl surveys. (Source: 2022 Assessment Update of Gulf of Maine Winter Flounder)

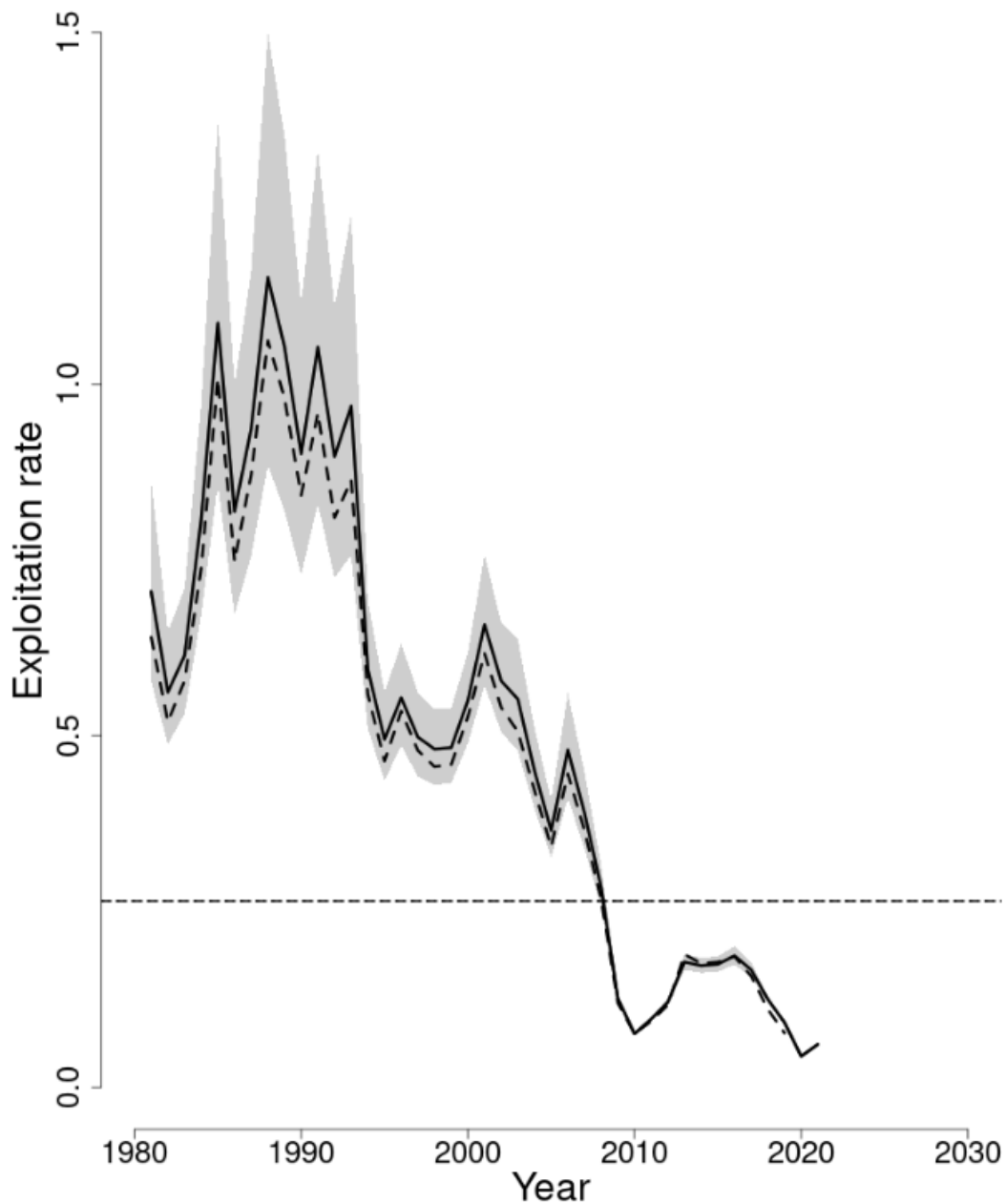


**Figure 2.** Gulf of Maine winter flounder exploitation rate between 2009 and 2021. The dashed line represents the corresponding F-Threshold from the 2022 assessment. (Source: 2022 Assessment Update of Gulf of Maine Winter Flounder)

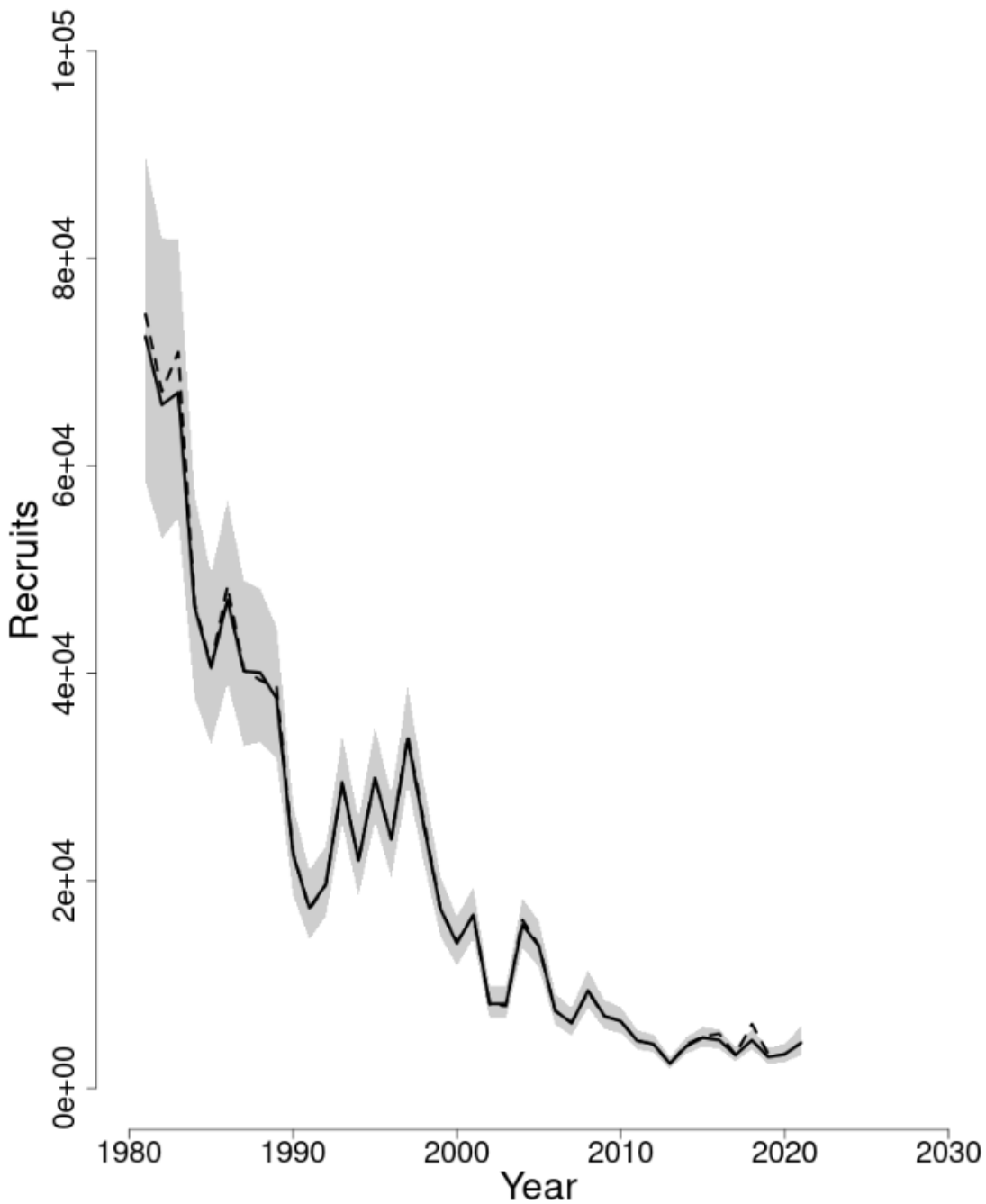


**Figure 3.** Southern New England/Mid-Atlantic winter flounder spawning stock biomass between 1981 and 2021. The solid line represents results of the current assessment and the dashed line represents results from the previous assessment. The horizontal dotted line is the SSB-target and the horizontal dashed line is the SSB-threshold based on the 2022 assessment. The 90% confidence intervals are shown in grey. (Source: 2022 Assessment Update of Southern New England Mid-Atlantic Winter Flounder)





**Figure 4.** Southern New England/Mid-Atlantic winter flounder fishing mortality between 1981 and 2021. The solid line represents results of the current assessment and the dotted line represents results from the previous assessment. The horizontal dashed line is the F-threshold based on the 2022 assessment. The 90% confidence intervals are shown in grey. (Source: 2022 Assessment Update of Southern New England Mid-Atlantic Winter Flounder)



**Figure 5.** Southern New England/Mid-Atlantic winter flounder trends in recruits (000s) between 1981 and 2021. The solid line represents results of the current assessment and the dotted line represents results from the previous assessment. The 90% confidence intervals are shown in grey. (Source: 2022 Assessment Update of Southern New England Mid-Atlantic Winter Flounder)

### Commercial and Recreational Winter Flounder Landings

Sources: State Compliance Reports, ACCSP, MRIP 2023

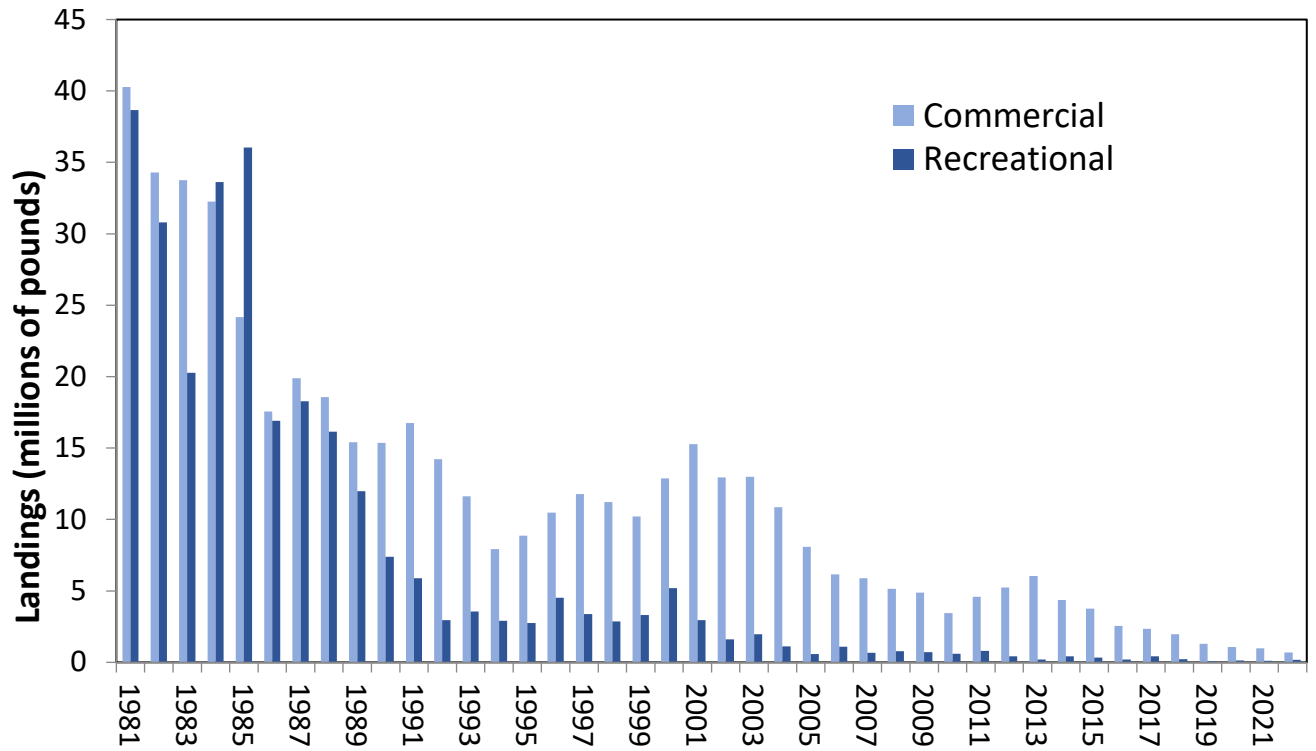


Figure 6. Commercial and recreational winter flounder landings.

**Table 1. Coastwide commercial and recreational landings of winter flounder.**

Source: ACCSP, MRIP.

<b>Year</b>	<b>Commercial Landings (lbs)</b>	<b>Recreational Landings (lbs)</b>	<b>Total Harvest (lbs)</b>
1981	40,281,800	38,658,240	78,940,041
1982	34,287,800	30,800,886	65,088,685
1983	33,762,300	20,270,442	54,055,083
1984	32,259,500	33,619,053	65,878,553
1985	24,169,500	36,044,271	60,236,129
1986	17,551,600	16,910,804	34,462,404
1987	19,900,600	18,267,160	38,263,989
1988	18,558,400	16,152,719	34,724,190
1989	15,403,400	11,984,077	27,388,876
1990	15,375,295	7,388,964	22,764,259
1991	16,755,114	5,879,856	22,634,970
1992	14,232,802	2,952,663	17,185,467
1993	11,618,074	3,556,271	15,184,307
1994	7,934,950	2,918,614	10,855,524
1995	8,869,168	2,752,809	11,621,978
1996	10,489,726	4,533,524	15,023,249
1997	11,774,996	3,369,650	15,164,882
1998	11,213,153	2,861,094	14,077,436
1999	10,219,341	3,323,925	13,543,267
2000	12,876,176	5,190,358	18,066,533
2001	15,274,384	2,961,872	18,236,255
2002	12,955,503	1,611,635	14,567,138
2003	12,986,593	1,967,619	14,954,212
2004	10,854,383	1,118,236	11,972,618
2005	8,074,650	575,650	8,650,300
2006	6,149,946	1,087,320	7,237,266
2007	5,882,975	677,000	6,559,975
2008	5,158,100	787,911	5,946,010
2009	4,877,566	715,732	5,593,298
2010	3,452,445	600,397	4,052,841
2011	4,593,883	805,448	5,399,331
2012	5,238,701	427,191	5,665,892
2013	6,054,017	191,785	6,245,801
2014	4,375,270	415,101	4,790,371
2015	3,752,672	336,896	4,089,568
2016	2,561,793	203,185	2,764,978
2017	2,347,429	428,764	2,776,587
2018	1,976,173	223,355	2,199,529
2019	1,286,817	87,074	1,373,891
2020	1,078,525	140,609	1,219,134
2021	991,501	112,676	1,104,177
2022	692,503	178,908	871,411

**Table 2. 2022 Winter flounder commercial landings and recreational harvest (A + B1) by weight (lbs) by state. "C" denotes confidential landings. (Source: State compliance reports, ACCSP, and MRIP)**

State	Commercial		Recreational		
	Pounds	Percent	Pounds	PSE	Percent
Maine*	C	C	811	102	0.5%
New Hampshire*	C	C	5,264	72.8	2.9%
Massachusetts	648,029	93.69%	169,468	32.2	94.7%
Rhode Island	30,191	4.37%	52	102	0.0%
Connecticut	7,567	1.09%	136	85	0.1%
New York*	C	C	299	103	0.2%
New Jersey	3,950	0.57%	2,878	74.8	1.6%
<b>Total</b>	692,503		178,908		

**\*New York and New Hampshire's commercial landings are not confidential, but have been removed to keep Maine's landings confidential.**

**Table 3. Commercial winter flounder regulations.**

<b>State</b>	<b>Stock Unit</b>	<b>Size Limit</b>	<b>Trip Limit</b>	<b>Seasonal Closure (dates inclusive)</b>	<b>Recruitment Assessment</b>	<b>SSB Assessment</b>	<b>Min. Mesh Size</b>	<b><i>De minimis Request</i></b>
<b>Maine</b>	GOM	12"	500 lbs	April 1 – June 30	N/A	N/A	6.5"	No
<b>New Hampshire</b>	GOM	12"	500 lbs	April 1 – June 30	N/A	N/A	6.5"	No
<b>Massachusetts</b>	GOM	12"	500 lbs	Open all year	N/A	Bottom Trawl Survey (May, Sept)	6.5"	No
	SNE/MA	12"	50 lbs	Open all year	YOY Seine Survey (June)	Bottom Trawl Survey (May, Sept)	6.5"	No
<b>Rhode Island</b>	SNE/MA	12"	50 lbs	Open all year	Narragansett Bay Juvenile Finfish Survey	Bottom Trawl Surveys	6.5"	No
<b>Connecticut</b>	SNE/MA	12"	50 lbs or 38 fish	March 1 – April 14	YOY Fall Estuarine Seine Survey	Long Island Sound Trawl Survey	6.5"	No
<b>New York</b>	SNE/MA	12"	50 lbs	June 14 – Nov 30 (for all gear besides fyke nets, pound and trap nets)	Small Mesh Trawl Survey, Seine Survey	N/A	6.5"	No
<b>New Jersey</b>	SNE/MA	12"	38 fish	June 1 – Nov 30 (all gear except for fyke nets)  Feb 20 – Oct 31 (Fyke net)	N/A	Ocean Trawl Survey	6.5"	Yes

**Table 4. Recreational winter flounder regulations.**

<b>State</b>	<b>Stock Unit</b>	<b>Creel Limit</b>	<b>Size Limit</b>	<b>Seasonal Closure (dates inclusive)</b>
<b>Maine</b>	GOM	8	12"	Open all year
<b>New Hampshire</b>	GOM	8	12"	Open all year
<b>Massachusetts</b>	GOM	8	12"	Open all year
	SNE/MA	2	12"	January 1- February 28
<b>Rhode Island</b>	SNE/MA	2	12"	January 1 – February 28
<b>Connecticut</b>	SNE/MA	2	12"	January 1 – March 31
<b>New York</b>	SNE/MA	2	12"	May 31 – March 31
<b>New Jersey</b>	SNE/MA	2	12"	January 1 – February 28