Introduction

This document summarizes the 2025 Stock Assessment Updates for the Gulf of Maine (GOM) and Southern New England/Mid-Atlantic (SNE/MA) winter flounder stocks. Both assessments revise the 2011 Benchmark Stock Assessments that were peer-reviewed by an independent panel of scientific experts at the 52nd Northeast Regional Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC 52) meeting. These assessments reflect the latest and best information available on the status of the two winter flounder stocks for use in fisheries management.

Management Overview

Winter flounder (*Pseudopleuronectes americanus*) is an estuarine flatfish found in almost all shoal water habitats along the Northwest Atlantic coast. The geographic distribution ranges from nearshore habitats to offshore fishing banks along the New England and Mid-Atlantic coast of North America.

Winter flounder are jointly managed by the Atlantic States Marine Fisheries Commission (ASMFC) and the New England Fishery Management Council (NEFMC) under complementary fishery management plans. This is due to their presence in, and migration between, state waters (0-3 miles) and federal waters (3-200 miles). The Commission establishes management measures to be implemented by the states in accordance with Amendment 1 to the Winter Flounder Fishery Management Plan. NEFMC sets regulations for federal waters in accordance with the Northeast Multispecies Fishery Management Plan. The management unit for the GOM stock includes waters north of Cape Cod to the US-Canada border. By comparison, the SNE/MA stock area spans the waters south of Cape Cod to the Delaware-Maryland border.

In February 2023, the Winter Flounder Management Board approved status quo specifications (commercial trip limits, minimum size limits, seasons, area closures, and recreational bag limits) in state waters for the 2024-2025 fishing years. These same measures have been in place since 2014. Federal management focuses on the commercial fishery because the bulk of harvest in federal waters is attributed to commercial vessels. The federal commercial fishery is managed through an annual catch limit to prevent overfishing.

Life History

Winter flounder make annual spawning migrations into nearshore waters primarily during the winter. Adults migrate in two phases. An autumn estuarine migration occurs prior to spawning. In the late spring/early summer after spawning, they travel to either deeper, cooler portions of estuaries or to offshore areas. This pattern of seasonal distribution may change in colder waters at the northern extent of their range. Under these differing temperature conditions, winter flounder make a reverse migration to shallow waters in the summer and deeper waters in the winter. The annual spawning period varies geographically. Although spawning periods overlap considerably, peak spawning times are earlier in southern locations.

During spawning, females release eggs whose adhesive properties facilitate retention within spawning grounds. Many factors influence larval and juvenile growth and survival, including

temperature, salinity, dissolved oxygen, and food availability. Nursery habitat for winter flounder larvae and juveniles is typically saltwater coves, coastal salt ponds, estuaries, and protected embayments; although larvae and juveniles have also been found in open ocean areas such as Georges Bank and Nantucket shoals. Larvae are predominantly found in the upper reaches of estuaries in early spring, moving into the lower estuary later in the season. Five to six weeks after they hatch, larvae settle to the bottom to begin their transformation into juveniles. After several weeks of adapting to living on the bottom, juveniles' left eye migrates to the right side of their body and their metamorphosis is complete.

What Data Were Used?

The GOM and SNE/MA stock assessments used fishery-dependent and -independent data collected through state, federal, and academic research programs. Fishery-dependent data are collected from fish caught by either commercial or recreational fisheries. Whereas fishery-independent data are collected from fish caught through biological surveys that are operated independently from commercial and recreational fisheries. The SNE/MA assessment included final data through 2024, and the GOM assessment included final data through spring 2025.

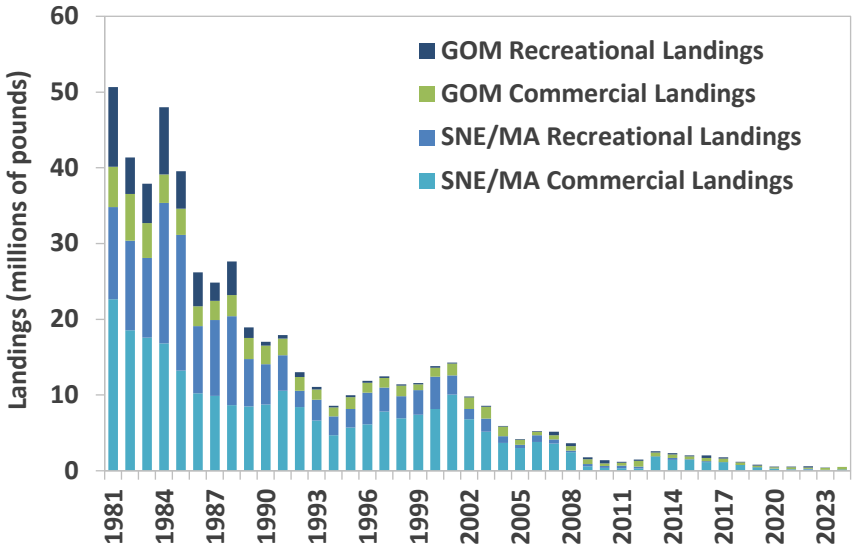
Commercial and Recreational Data

GULF OF MAINE

The stock assessment used commercial and recreational fishery landings and discards data. A discard mortality rate of 15% was assumed for recreational discards and 50% for commercial discards. Discards were estimated for the large mesh trawl (1982-2024), gillnet (1982-2024), and northern shrimp fishery (1982-2024).

Figure 1. Commercial & Recreational Landings by Stock Unit

Source: Northeast Fisheries Science Center, 2025



Throughout the management area, states conduct strict commercial quota monitoring through various state and federal dealer and harvester reporting systems. Data from those sources is compiled into annual landings by state biologists.

The commercial fishery has experienced sharp declines in landings since the industry's heyday in the 1980s (Figure 1). Commercial landings peaked in 1982 at just over 6 million pounds and then declined steadily to approximately 770,000 pounds in 1999. Commercial landings have been below one million pounds since 2005 and were approximately 354,283 pounds in 2024.

Recreational catch, effort, and fish length frequency data were obtained from the Marine Recreational Information Program (MRIP) for 1982-2024. Starting in 2018, MRIP estimates of recreational effort and catch were improved through a transition from a phone-based survey to a mail-based survey to estimate fishing effort. Catch estimates prior to 2018 were subsequently calibrated to the new estimation methodology based on the improved mail-based survey.

Recreational landings represented a significant portion of total harvest on the GOM stock during the 1980s, ranging between 2.5 and 10.5 million pounds (Figure 1). Recreational landings dropped below 440,000 pounds in 1992 and continued to drop to a time series low of approximately 49,824 pounds in 2024. This significant reduction in landings is largely attributable to low availability and/or low effort.

SOUTHERN NEW ENGLAND/MID-ATLANTIC

Similar to the GOM update, the SNE/MA update also relied on commercial and recreational fishery landings and discards data. A discard mortality rate of 15% was assumed for recreational discards and a discard mortality rate of 50% was assumed for commercial discards.

Commercial landings from the SNE/MA stock have declined significantly from the record high of 22.6 million pounds in 1981 (Figure 1). Commercial landings averaged 14.8 million pounds in the 1980s, 7.3 million pounds in the 1990s, and 4.7 million pounds in the 2000s. In response to the poor condition of the stock, a moratorium in the SNE/MA fishery was implemented in federal waters between May 2009 and April 2013. Concurrently, a 50-pound commercial bycatch limit was implemented in state waters and still remains in place today. SNE/MA commercial landings only averaged 582,285 pounds in the past 10 years (2015-2024), with approximately 167,772 pounds landed in 2024.

The recreational fishery has also experienced significant declines over time due to decreases in abundance. Landings were around 12 million pounds in the early 1980s, increased to 18.5 million pounds in 1984, and then precipitously declined to between 2 and 4.5 million pounds from 1992 to 2001 (Figure 1). Landings continued to decline over the next two decades, from a high of 1.4 million pounds in 2002 to a low of 1,102 pounds in 2019. In 2024, recreational landings were estimated at 4,409 pounds.

Fishery-Independent Surveys

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The GOM stock assessment used research survey indices of abundance to estimate area-swept estimates of 30+ cm biomass based on the Northeast Fisheries Science Center (NEFSC) Bigelow Survey, the Massachusetts Division of Marine Fisheries Trawl Survey, and the Maine/New Hampshire Inshore Trawl Survey. The area-swept method uses 30 cm and larger mean catch (in weight) per unit of effort or per unit of area as an index of the exploitable biomass. This biomass index is expanded into an absolute measure of total 30+ cm biomass. All three of the surveys are conducted annually in the spring and fall.

SOUTHERN NEW ENGLAND/MID-ATLANTIC

The SNE/MA stock assessment used several fishery-independent indices of abundance with associated age compositions from the NEFSC Winter, Spring, and Fall Surveys; the Northeast Area Monitoring and Assessment Program Spring Survey; the Massachusetts Spring Trawl Survey; the Rhode Island Spring Trawl Survey; the University of Rhode Island Graduate School of Oceanography Fish Trawl Survey; the Connecticut Long Island Sound Spring Trawl Survey; and the New Jersey Ocean and River Spring Survey. The model also used recruitment indices (age-0; young-of-the-year or YOY) from surveys conducted by the Massachusetts Department of Marine Fisheries and the Connecticut Department of Energy and Environmental Protection.

How Were the Data Analyzed?

Gulf of Maine – Area-Swept Assessment

GOM winter flounder assessment models developed during the 2011 assessment were determined to be too unreliable for stock status determination. The population models had difficulty with the conflicting data trends

within the assessment, specifically, the large decrease in the catch over the time series with very little change in the indices or age structure in both the catch and surveys. Instead, an area-swept approach was utilized to produce an estimate of biomass. However, the area-swept method is unable to determine if the stock is overfished.

SNE/MA – Age-Structured Model, ASAP

The age-structured assessment program (ASAP) model is the accepted model for the SNE/MA winter flounder stock assessment. This model uses commercial and recreational fishery landings-at-age and discards-at-age, as well as indices of abundance, to estimate annual stock size and fishing mortality rates. Indices of abundance indicate relative changes in abundance over time, while catch data provide information on the magnitude of abundance and the proportion of abundance removed by fishing. Age composition data link the information provided by indices of abundance and catch to specific year classes. Stock abundance is tracked by the model as new year classes recruit to the stock and then decline over time due to mortality (both natural and fishing).

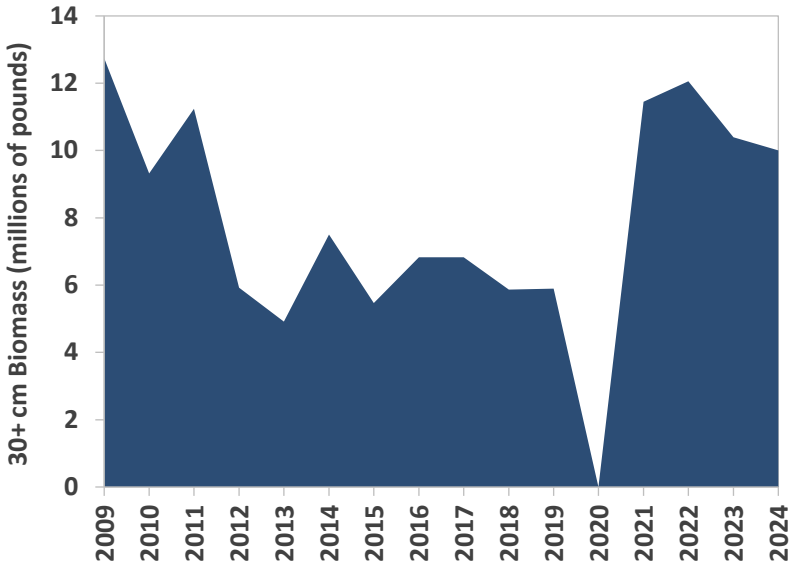
What is the Status of the Stock?

Gulf of Maine

As described previously, the GOM stock was assessed using an area-swept model which does not provide spawning stock biomass (SSB) reference points. As such, it is unknown if the stock is overfished. However, the assessment does provide an estimate of biomass for fish 30 cm and larger for 2009-2024 (Figure 2). The 2024 30+ cm exploitation rate was estimated to be 19% of the overfishing exploitation threshold proxy, indicating the stock is not experiencing overfishing.

Figure 2. Gulf of Maine 30+ cm Biomass

Source: Northeast Fisheries Science Center Fall Survey, 2025



The GOM winter flounder stock has relatively flat survey indices with little change in the composition of age classes over time. This phenomenon is concerning considering the declining level of annual landings in the GOM. Overall, these indices of abundance have not demonstrated any positive response to the large declines in commercial and recreational removals since the 1980s. However, recent increases (2021-2024) in biomass, if they continue, could be the beginning of a response to continued low fishing effort.

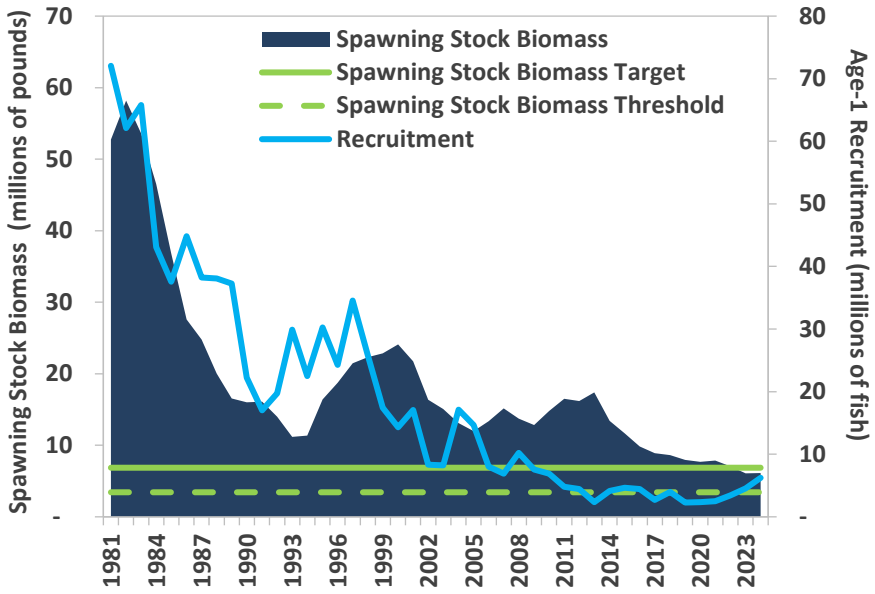
Southern New England/Mid-Atlantic

The 2025 assessment indicates the SNE/MA stock of winter flounder is not overfished and not experiencing overfishing relative to the updated biological reference points defined in the assessment. This change in stock status compared to previous assessments is due to a change in the years of recruitment estimates used to estimate biological reference points. Instead of drawing upon the entire time series of recruitment estimates, the projections now only use recruitment estimates from 2002-2024. The winter flounder stock is most likely not capable of achieving the high levels of recruitment prior to 2000; therefore, using a truncated recruitment time series better reflects the current state of the stock.

SSB in 2024 is estimated at 6.14 million pounds, 89% of the SSB target of 6.86 million pounds (Figure 3). Total fishing mortality is estimated at 0.048, which is 21% of the overfishing threshold of 0.233 (Figure 4). Natural mortality, defined as the removal of fish from the stock due to causes not associated with fishing, is a source of uncertainty in the stock assessment. Natural mortality may be contributing to declining abundance.

Despite a change in stock status, the perception of the stock has not changed; trends in survey indices and model estimates all continue to indicate the stock is in poor condition.

Figure 3. Southern New England/Mid-Atlantic Spawning Stock Biomass
Source: Northeast Fisheries Science Center, 2025



Recruitment

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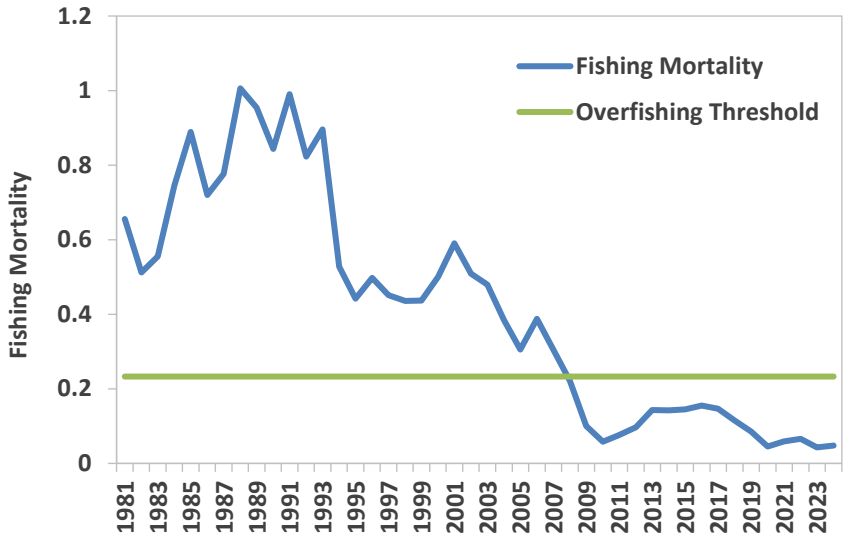
Estimates of recruitment are not possible under the area-swept assessment method.

SOUTHERN NEW ENGLAND/ MID-ATLANTIC

Recruitment, or the number of age-1 fish, for the SNE/MA stock has decreased significantly since peaking in 1981 at around 160 million. Since 1981 recruitment decreased precipitously to a low of 49 million in 1991. Recruitment had a small resurgence in the 1990s, reaching a peak in 1997 at 75 million fish before dropping to around 10 million recruits per year in 2011. Recruitment in 2024 was estimated at 6.2 million fish (Figure 3). Preliminary analysis has revealed that winter estuarine water temperature influences recruitment. This may indicate that warming winter temperatures are related to a reduction in the number of age-0 and age-1 fish. However, the exact environmental drivers of this declining trend in recruitment have not been definitively identified yet.

Figure 4. Southern New England/Mid-Atlantic Fishing Mortality
Source: Northeast Fisheries Science Center, 2025



Biological Reference Points

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The area-swept assessment does not produce biomass-based biological reference points.

SOUTHERN NEW ENGLAND/MID-ATLANTIC

The reference points used for management include a fishing mortality threshold of 0.233, SSB target of 6.86 million pounds, and SSB threshold of 3.43 million pounds. The SSB reference points are much lower than the previous assessment, due to limiting the recruitment estimates used in the projections to the past 23 years.

Data and Research Priorities

Gulf of Maine

The stock assessment indicated several areas for improvement. The area-swept assessment could be improved with additional studies on state survey gear efficiency. The current assessment averaged the full time series of catchability estimates, but the area-swept assessment model may more precisely estimate winter flounder biomass within the GOM if year-specific catchability estimates are applied instead. Statistical approaches that overcome the imbalance between night and day tows in a stratum could also be investigated. The assessment also identified the need for more studies quantifying winter flounder abundance and distribution among habitat types, and especially within estuarine environments.

Southern New England/Mid-Atlantic

The SNE/MA winter flounder assessment could be improved with additional studies on maximum age and maturity, particularly with regard to latitudinal patterns. The localized structure or genetics of the stock should be examined. The migration and movement rates of SNE/MA winter flounder need to be updated and investigated, especially as there has been advances in tagging technology and study design since the previous studies were conducted. Environmental influences on recruitment, mortality, and/or survey catchability should be incorporated when evaluating the stock using state-space models. All three winter flounder stocks (SNE/MA, GOM, and Georges Bank) should be assessed at the same time. Alternative model structures that may be robust to patterns of biases evident in age composition fits in commercial catch data and survey time series should be evaluated.

Next Steps

The Winter Flounder Management Board will meet at the Commission's Winter Meeting in February 2026 to set specifications for 2026-2028.

Glossary

Age structure: the separation of a fish population into distinct age groups

Age-Structured Assessment Program (ASAP): an age-structured stock assessment model that works forward in time to estimate population size and fishing mortality in each year

Area-swept method or approach: The mean catch (in weight) per unit of effort or per unit of area is an index of the stock abundance. This index is converted into an absolute measure of biomass.

Benthic: at or near the bottom of a body of water including the lowest level of water and bottom substrate

Demersal eggs: negatively or neutrally buoyant eggs

Fishing mortality rate: the instantaneous rate at which fish are killed by fishing

Recruitment: a measure of the weight or number of fish that enter a defined portion of the stock, such as the spawning stock or fishable stock. For this stock assessment, recruitment refers to the number of age-1 fish entering the population

Spawning stock biomass (SSB): the total weight of the mature females within a stock of fish; frequently used instead of total biomass as a better measure of the ability of a stock to replenish itself

Young-of the-year (YOY): an individual fish in its first year of life; for most species, YOY are juveniles, age-0 fish

References

ASMFC. 2009. Guide to Fisheries Science and Stock Assessments. Arlington, VA. https://asmfc.org/resources/science-guiding-document/guide-to-fisheries-science-and-stock-assessments/

NEFSC, 2025. Gulf of Maine Winter Flounder Management Track Assessment Report, Northeast Fisheries Science Center, Woods Hole, Massachusetts.

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