



## Summer Flounder Fishery Information Document

June 2020

This document provides a brief overview of the biology, stock condition, management system, and fishery performance for summer flounder (*Paralichthys dentatus*) with an emphasis on 2019. Data sources include unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources on summer flounder management, including previous Fishery Information Documents, please visit <http://www.mafmc.org/sf-s-bsb>.

### Key Facts:

- The 2018 benchmark stock assessment found that in 2017, summer flounder was not overfished and overfishing was not occurring. Incorporation of a revised time series of recreational data from MRIP contributed to an increase in estimated stock biomass compared to the previous assessment.
- The 2019 and 2020 data updates show signs of an above-average 2018 year class.
- Commercial quotas and recreational harvest limits were increased mid-year in 2019 by about 50% each. Given that the revised MRIP harvest estimates for the recreational fishery were approximately equal to the new recreational harvest limit for 2019, recreational measures could not be liberalized in 2019.
- Commercial landings increased by about 47% between 2018 and 2019 (from 6.14 mil lb to 9.06 mil lb), while recreational landings were similar between these two years (7.60 mil lb and 7.80 mil lb).
- Average commercial ex-vessel price consistently increased from 2011 through 2017 to a high of \$4.40 per pound, but fell somewhat in 2019 to \$3.15 per pound.

### Basic Biology

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Adult summer flounder exhibit strong seasonal inshore-offshore movements, normally inhabiting shallow coastal and estuarine waters during the warmer months of the year and remaining offshore during the colder months.

Summer flounder habitat includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas from the Gulf of Maine through North Carolina. Summer flounder are opportunistic feeders; their prey includes a variety of fish and crustaceans. While the natural predators of adult summer flounder are not fully documented, larger predators (e.g., large sharks, rays, and monkfish) probably include summer flounder in their diets.<sup>1</sup>

Spawning occurs during autumn and early winter, and the larvae are transported toward coastal areas by prevailing water currents. Development of post larvae and juveniles occurs primarily within bays and estuarine areas. Most fish are sexually mature by age 2. The largest fish are females, which can attain lengths over 90 cm (36 in) and weights up to 11.8 kg (26 lb). The Northeast Fisheries Science Center (NEFSC) commercial fishery sampling in 2018 observed the oldest summer flounder collected to date, a 57 cm fish (likely a male) estimated to be age 20. Also sampled were two age 17 fish, at 52 cm (likely a male) and at 72 cm (likely a female). Two large (likely female) fish at 80 and 82 cm were both estimated to be age 9, from the 2009 year class (the 6<sup>th</sup> largest of the 36 year modeled time series). These samples indicate that increased survival of summer flounder over the last two decades has allowed fish of both sexes to grow to the oldest ages estimated to date.<sup>2</sup>

### Status of the Stock

The most recent benchmark summer flounder stock assessment was completed and reviewed during the 66<sup>th</sup> Stock Assessment Workshop and Stock Assessment Review Committee (SAW/SARC 66) in November 2018.<sup>3</sup> This assessment uses a statistical catch at age model (the age-structured assessment program, or “ASAP” model). Stock assessment and peer review reports are available online at the Northeast Fisheries Science Center (NEFSC) website: <http://www.nefsc.noaa.gov/saw/reports.html>.

The assessment incorporated the revised time series of recreational catch from MRIP, which is 30% higher on average compared to the previous summer flounder estimates for 1981-2017. The MRIP estimate revisions account for changes in both the angler intercept survey and recreational effort survey methodologies. While fishing mortality rates were not strongly affected by incorporating these revisions, increased recreational catch resulted in increased estimates of stock size compared to past assessments.

The biological reference points for summer flounder as revised through the recent benchmark assessment are described in Table 1.

**Table 1:** Summary of biological reference points and terminal year SSB and F estimates from the 2018 benchmark stock assessment.

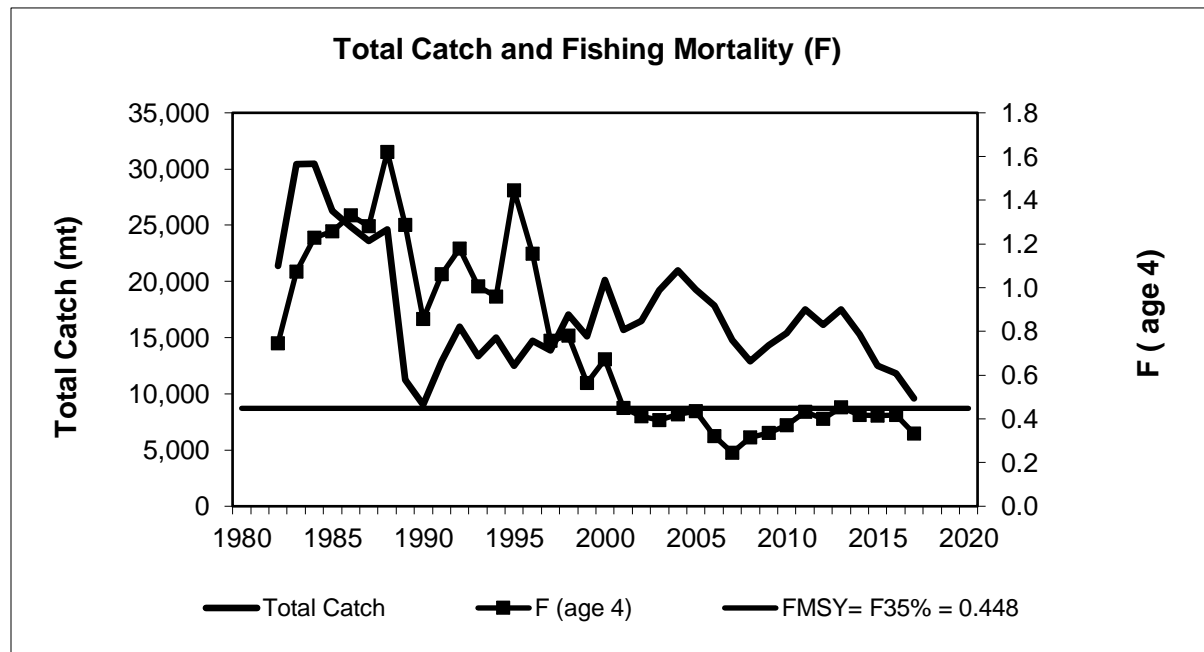
	<b>2018 stock assessment Biological Reference Points and stock status results (data through 2017)</b>
<b>SSB<sub>MSY</sub> (biomass target)</b>	126.01 mil lb (57,159 mt)
<b>½ SSB<sub>MSY</sub> (minimum stock size, or overfished, threshold)</b>	63.01 mil lb (28,580 mt)
<b>Terminal year SSB (2017)</b>	98.22 mil lb (44,552 mt) 78% of SSB <sub>MSY</sub> ( <b>not overfished</b> )
<b>F<sub>MSY PROXY</sub> = F<sub>35%</sub> (overfishing threshold)</b>	0.448
<b>Terminal year F (2017)</b>	0.334 25% below F <sub>MSY</sub> ( <b>not overfishing</b> )

Assessment results indicate that the summer flounder stock was not overfished and overfishing was not occurring in 2017. Fishing mortality on the fully selected age 4 fish ranged between 0.744 and 1.622 during 1982-1996 and then decreased to 0.245 in 2007. Since 2007 the fishing mortality rate has increased, and in 2017 was estimated at 0.334, below fishing mortality threshold of 0.448 (Figure 1). The 90% confidence interval for F in 2017 was 0.276 to 0.380.

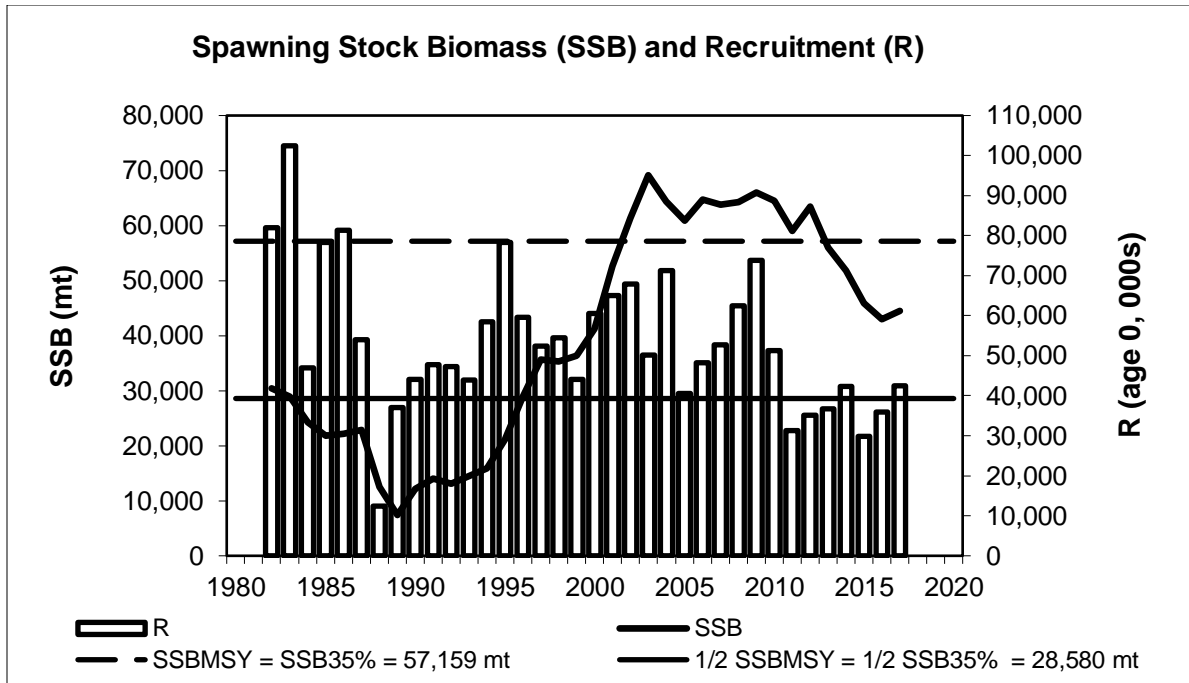
SSB decreased from 67.13 million lb (30,451 mt) in 1982 to 16.33 million lb (7,408 mt) in 1989, and then increased to 152.46 million lb (69,153 mt) in 2003. SSB has decreased since 2003 and was estimated to be 98.22 million lb (44,552 mt) in 2017, about 78% of  $SSB_{MSY} = 126.01$  million lb (57,159 mt), and 56% above the  $\frac{1}{2} SSB_{MSY}$  proxy =  $\frac{1}{2} SSB_{35\%} = 63.01$  million lb (28,580 mt; Figure 2).<sup>3</sup>

Recruitment of juvenile summer flounder to the fishery has been below average since about 2011 (Figure 2). The driving factors behind this trend have not been identified. Bottom trawl survey data also indicate a recent trend of decreasing length and weight at age, which implies slower growth and delayed maturity. These factors affected the change in biological reference points used to determine stock status.

Data updates were received in 2019 and 2020 with updated catch and landings information as well as federal trawl survey indices (for both 2019 and 2020) and state indices (2019 only). The 2020 data update indicates that the NEFSC spring survey index of summer flounder stock biomass decreased by 4% from 2018 to 2019 and the fall index decreased by 36% from 2018 to 2019.<sup>4</sup> Both data updates suggest that an above average year class recruited to the stock in 2018.<sup>2,4</sup>



**Figure 1:** Total fishery catch (mt; solid line) and fully-recruited fishing mortality (F, peak at age 4; solid line with squares) of summer flounder. The horizontal solid line is the fishing mortality reference point proxy.<sup>3</sup>



**Figure 2:** Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) 1980-2017. The horizontal dashed line is the target biomass reference point. The horizontal solid line is the threshold biomass reference point.<sup>3</sup>

## Management System and Fishery Performance

### Management

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission or ASMFC) work cooperatively to develop fishery regulations for summer flounder off the east coast of the United States. The Council and Commission work in conjunction with NMFS, which serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and federal waters (3-200 miles offshore, also known as the Exclusive Economic Zone, or EEZ).

The joint Fishery Management Plan (FMP) for summer flounder became effective in 1988, and established the management unit for summer flounder as U.S. waters from the southern border of North Carolina northward to the U.S.-Canadian border. The FMP also established measures to ensure effective management of summer flounder fisheries, which currently include catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP.

There are large commercial and recreational fisheries for summer flounder. These fisheries are managed primarily using output controls (catch and landings limits), with 60 percent of the total allowable landings allocated to the commercial fishery as a commercial quota and 40 percent allocated to the recreational fishery as a recreational harvest limit. Management also uses minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. The Summer Flounder FMP, including subsequent Amendments and Frameworks, are available on the Council website at: <http://www.mafmc.org/fisheries/fmp/sf-s-bsb>.

The Council’s Scientific and Statistical Committee (SSC) recommends annual Acceptable Biological Catch (ABC) levels for summer flounder, which are then approved by the Council and Commission and submitted to NMFS for final approval and implementation. The ABC is divided into commercial and recreational Annual Catch Limits (ACLs), based on the landings allocation prescribed in the FMP and the recent distribution of discards between the commercial and recreational fisheries. The Council first implemented recreational and commercial ACLs, with a system of overage accountability, in 2012. Both the ABC and the ACLs are catch limits (i.e., include both projected landings and discards), while the commercial quota and the recreational harvest limit are landing limits. Table 2 shows summer flounder catch and landings limits from 2008 through 2021, as well as commercial and recreational landings through 2019. Note that 2021 measures are expected to be revised slightly due to changes to the Council's risk policy adopted in December 2019.

Total (commercial and recreational combined) summer flounder landings, taking into account the revised recreational data from MRIP, generally declined throughout the early 1980s, and increased again in the mid-2000s before dropping to a time series low of 13.74 million lb in 2018 (Figure 3).<sup>5,6</sup>

**Table 2:** Summary of catch limits, landings limits, and landings for commercial and recreational summer flounder fisheries from 2010 through 2021. Values are in millions of pounds.

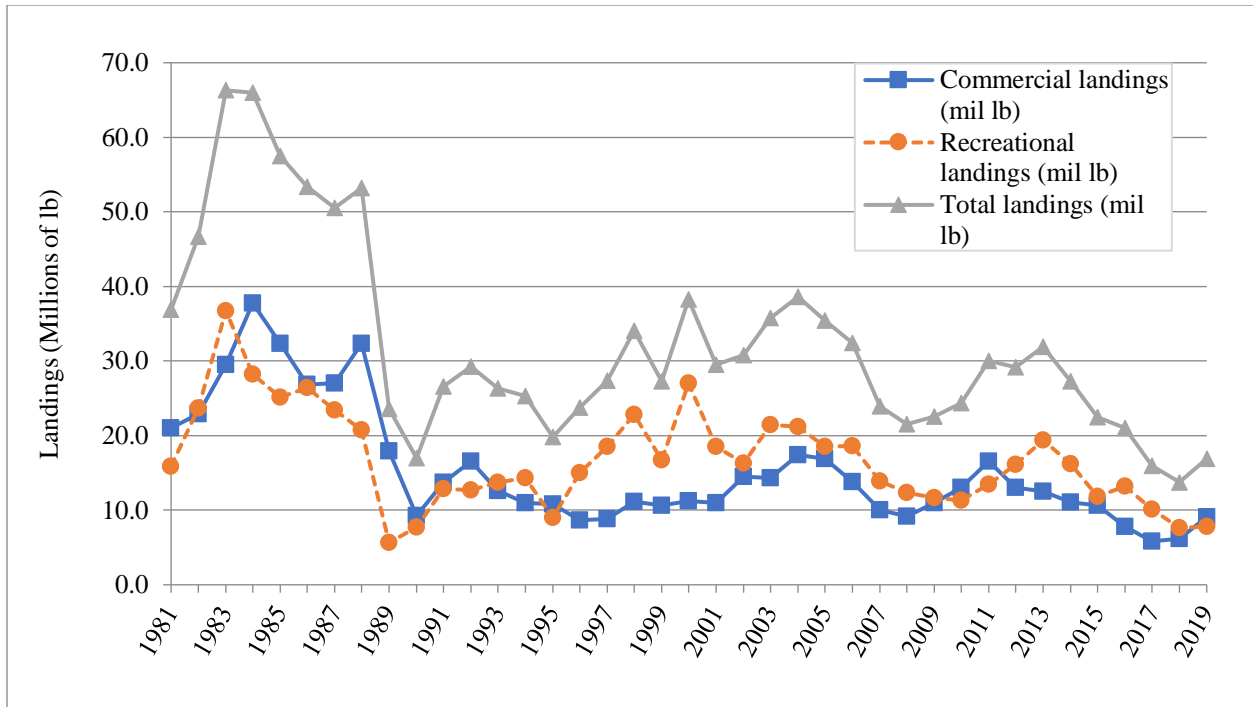
Management measures	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 <sup>a</sup>
ABC	25.50	33.95	25.58	22.34	21.94	22.57	16.26	11.30	13.23	25.03	25.03	25.03
Commercial ACL	--	--	14.00	12.11	12.87	13.34	9.43	6.57	7.70	13.53	13.53	13.53
Commercial quota <sup>b,c</sup>	12.79	17.38	12.73	11.44	10.51	11.07	8.12	5.66	6.63	10.98	11.53	11.53
Commercial landings	13.04	16.56	13.03	12.49	11.07	10.68	7.81	5.83	6.14	9.06	--	--
% of commercial quota landed	102%	95%	102%	109%	105%	96%	96%	103%	93%	83%	--	--
Recreational ACL	--	--	11.58	10.23	9.07	9.44	6.84	4.72	5.53	11.51	11.51	11.51
Recreational harvest limit <sup>b</sup>	8.59	11.58	8.49	7.63	7.01	7.38	5.42	3.77	4.42	7.69	7.69	7.69
Harvest - OLD MRIP	5.11	5.96	6.49	7.36	7.39	4.72	6.18	3.19	3.35	--	--	--
% of RHL landed (Old MRIP 2010-2018; New MRIP 2019) <sup>d</sup>	59%	51%	76%	96%	105%	64%	114%	85%	76%	101%	--	--
Harvest - NEW MRIP	11.34	13.48	16.13	19.41	16.24	11.83	13.24	10.08	7.60	7.80	--	--

<sup>a</sup> Implemented via final rule October 9, 2019 (84 FR 54041), but subject to review by the SSC and Council/Board in summer 2020. Limits are expected to be adjusted somewhat due to Council revisions to its risk policy in December 2019.

<sup>b</sup> For 2010-2014, commercial quotas and RHLs are adjusted for Research Set Aside (RSA). Quotas and harvest limits for 2015-2021 do not reflect an adjustment for RSA due to the suspension of the program in 2014.

<sup>c</sup> Commercial quotas also reflect deductions from prior year landings overages and discard-based Accountability Measures.

<sup>d</sup> The revised MRIP data cannot be compared to RHLs prior to 2019, given that these limits were set based on an assessment that used previous MRIP data.



**Figure 3:** Commercial and recreational summer flounder landings in millions of pounds, Maine-North Carolina, 1981-2019. Recreational landings are based on revised MRIP data.<sup>5,6</sup>

### Commercial Fishery

Commercial landings of summer flounder peaked in 1984 at 37.77 million pounds and reached a low of 5.83 million pounds in 2017. In 2019, commercial fishermen from Maine through North Carolina landed 9.06 million pounds of summer flounder, about 83% of the commercial quota (10.98 million pounds after deductions for prior year landings and discard overages; Table 2). Total ex-vessel value in 2019 was \$28.54 million, resulting in an average price per pound of \$3.15 (Figure 4).

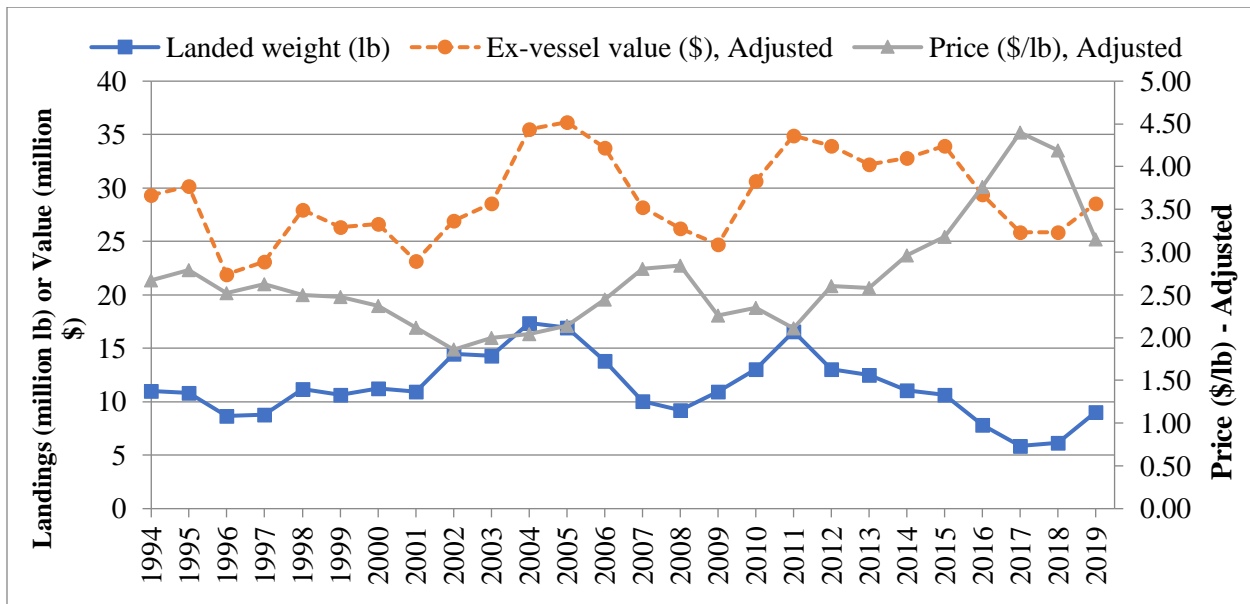
A moratorium permit is required to fish commercially for summer flounder in federal waters. In 2019, 738 vessels held such permits.<sup>7</sup>

The commercial quota is divided among the states based on the allocation percentages given in Table 3 and each state sets measures to achieve their state-specific commercial quotas. The Council and ASFMC recently approved modifications to the commercial allocations through a Summer Flounder Commercial Issues Amendment (see: <http://www.mafmc.org/actions/summer-flounder-amendment>). A summary of the commercial allocation changes is available at: <http://www.mafmc.org/s/SF-Allocation-Revisions-Fact-Sheet-March-2019.pdf>. These changes are pending implementation by the National Marine Fisheries Service, and if approved, are expected to take effect on January 1, 2021.

**Table 3:** State-by-state percent share of commercial summer flounder allocation.

State	Allocation (%)
ME	0.04756
NH	0.00046
MA	6.82046
RI	15.68298
CT	2.25708
NY	7.64699
NJ	16.72499
DE	0.01779
MD	2.03910
VA	21.31676
NC	27.44584
Total	100

For 1994 through 2019, NMFS dealer data indicate that summer flounder total ex-vessel revenue from Maine to North Carolina ranged from a low of \$21.93 million in 1996 to a high of \$36.16 million in 2005 (values adjusted to 2019 dollars to account for inflation). The mean price per pound ranged from a low of \$1.86 in 2002 to a high of \$4.40 in 2017 (both values in 2019 dollars). In 2019, 9.06 million pounds of summer flounder were landed generating \$28.54 million in total ex-vessel revenue (an average of \$3.15 per pound; Figure 4).<sup>5</sup>



**Figure 4:** Landings, ex-vessel value, and price per pound for summer flounder, Maine through North Carolina, 1994-2019. Ex-vessel value and price are adjusted to real 2019 dollars using the Gross Domestic Product Price Deflator (GDPDEF).<sup>5</sup>

VTR data for 2019 indicate that the bulk of the summer flounder landings were taken by bottom otter trawls (97 percent). All other gear types each accounted for less than 1 percent of landings.<sup>8</sup> Current regulations require a 14-inch total length minimum fish size in the commercial fishery. Trawl nets are required to have 5.5-inch diamond or 6-inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder (i.e., 200 lb from November 1-April 30 and 100 lb from May 1-October 31).

According to federal VTR data, statistical areas 616 and 537 were responsible for the highest percentage of commercial summer flounder catch (27% and 23% respectively; Table 4). While statistical area 539 accounted for only 6% of 2019 summer flounder catch, this area had the highest number of trips that caught summer flounder (2,510 trips).<sup>8</sup> Note that discards on VTRs are self-reported (Table 4; Figure 5).

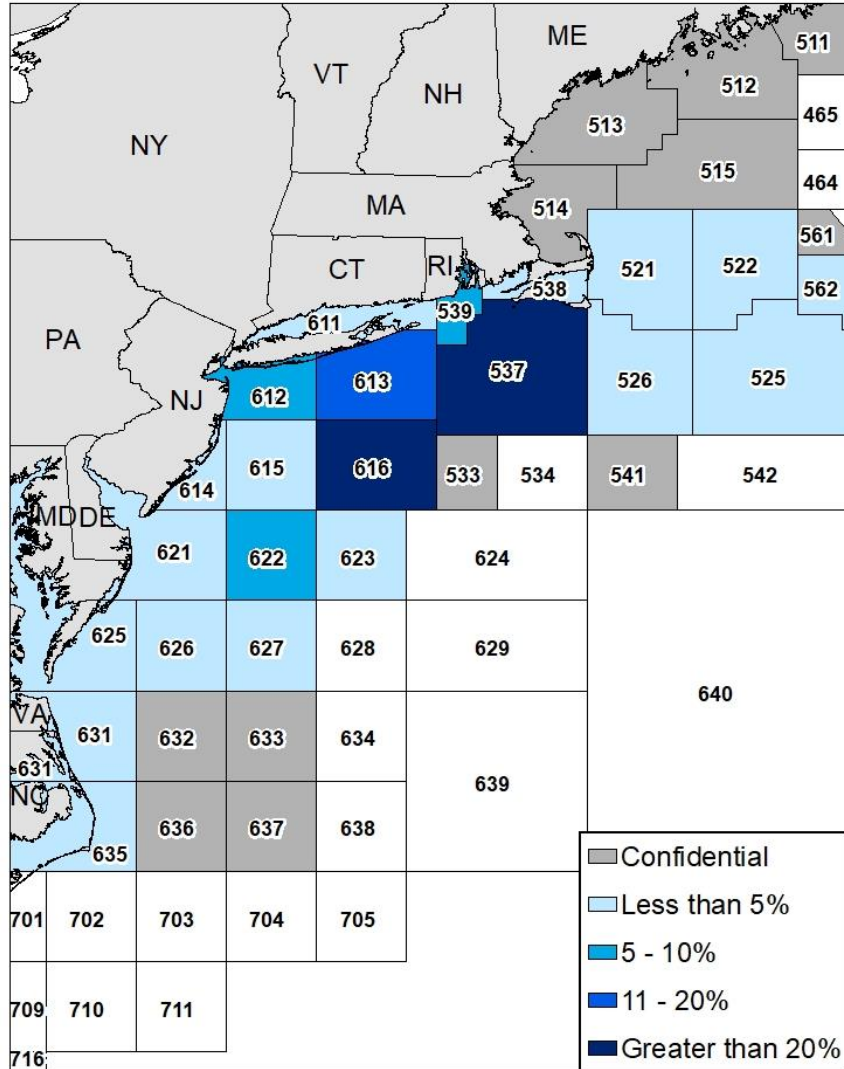
At least 100,000 pounds of summer flounder were landed by commercial fishermen in 17 ports in 8 states in 2019. These ports accounted for 87% of all 2019 commercial summer flounder landings. Point Judith, RI and Beaufort, NC were the leading ports in 2019 in pounds of summer flounder landed, while Point Judith, RI was the leading port in number of vessels landing summer flounder (Table 5).<sup>5</sup>

Over 175 federally permitted dealers from Maine through North Carolina bought summer flounder in 2019. More dealers from New York bought summer flounder than any other state (Table 6). All dealers combined bought approximately \$28.54 million worth of summer flounder in 2019.<sup>5</sup>

**Table 4:** Statistical areas that accounted for at least 5 percent of the total summer flounder catch in 2019, with associated number of trips.<sup>8</sup>

Statistical Area	Percent of 2019 Commercial Summer Flounder Catch	Number of Trips
616	27%	1,052
537	23%	1,469
613	13%	1,455
622	8%	272
612	7%	1,076
539	6%	2,510





**Figure 5:** Proportion of summer flounder catch by NMFS statistical area in 2019 based on federal VTR data. Statistical areas marked “confidential” are associated with fewer than three vessels and/or dealers. Statistical areas with confidential data collectively accounted for less than 1% of commercial catch reported on VTRs in 2019. The amount of catch (landings and discards) that was not reported on federal VTRs (e.g., catch from vessels permitted to fish only in state waters) is unknown. Northeast Fisheries Science Center Data (“AA tables”) suggest that 8% of total commercial landings (state and federal) in 2019 were not associated with a statistical area reported in federal VTRs.<sup>8</sup>

**Table 5:** Ports reporting at least 100,000 pounds of commercial summer flounder landings in 2019, based on dealer data.<sup>5</sup>

Port	Commercial summer flounder landings (lb)	% of total 2019 commercial summer flounder landings	Number of vessels landings summer flounder
POINT JUDITH, RI	1,446,867	16%	120
BEAUFORT, NC	1,220,608	13%	61
HAMPTON, VA	975,621	11%	58
PT. PLEASANT, NJ	936,899	10%	48
NEWPORT NEWS, VA	713,569	8%	49
MONTAUK, NY	494,045	5%	68
WANCHESE, NC	244,898	3%	14
BELFORD, NJ	235,410	3%	16
CAPE MAY, NJ	226,271	2%	44
ENGELHARD, NC	221,177	2%	10
NEW BEDFORD, MA	214,518	2%	53
CHINCOTEAGUE, VA	212,628	2%	23
HAMPTON BAYS, NY	186,292	2%	31
ORIENTAL, NC	158,368	2%	8

**Table 6:** Number of dealers per state which reported purchases of summer flounder in 2019. C = Confidential.<sup>5</sup>

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
# of Dealers	24	31	16	51	30	C	5	17	25

### *Recreational Fishery*

There is a significant recreational fishery for summer flounder, primarily in state waters when the fish migrate inshore during the warm summer months. The Council and ASMFC determine annually whether to manage the recreational fishery under coastwide measures or conservation equivalency. Under conservation equivalency, state- or region- specific measures are developed through the ASMFC's management process and submitted to NMFS. The combined state or regional measures must achieve the same level of conservation as would a set of coastwide measures developed to adhere to the overall recreational harvest limit. If NMFS considers the combination of the state- or region- specific measures to be "equivalent" to the coastwide measures, they may then waive the coastwide regulation in federal waters. Anglers fishing in federal waters are then subject to the measures of the state in which they land summer flounder.

The recreational fishery has been managed using conservation equivalency each year since 2001. From 2001 through 2013, measures were developed under state-by-state conservation equivalency. Since 2014, a regional approach has been used, under which the states within each region must have identical size limits, possession limits, and season length. The 2019 and 2020 regional conservation equivalency measures are given in Table 7. Changes in measures between 2019 and 2020 included a shift in the season of two days for the state of New Jersey, and restrictions to the season in North Carolina due to the need to restrict mortality on southern flounder.

**Table 7:** Summer flounder recreational fishing measures in 2019 and 2020, by state, under regional conservation equivalency. 2019 and 2020 regions include: 1) Massachusetts, 2) Rhode Island, 3) Connecticut and New York, 4) New Jersey, 5) Delaware, Maryland, The Potomac River Fisheries Commission, and Virginia, and 6) North Carolina.

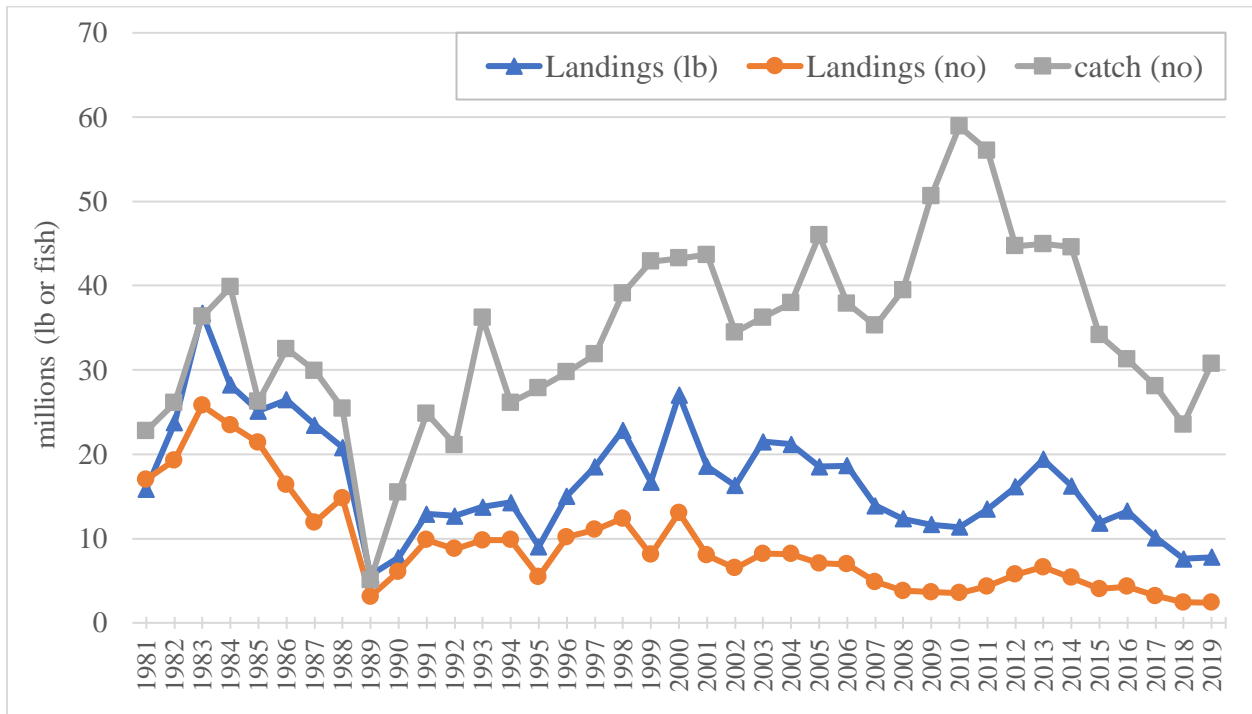
State	2019 and 2020		
	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	17	5 fish	May 23-October 9
Rhode Island (Private, For-Hire, and all other shore-based fishing sites)	19	6 fish	May 3-December 31
RI 7 designated shore sites	19	4 fish <sup>a</sup>	
	17	2 fish <sup>a</sup>	
Connecticut	19	4 fish	May 4- September 30
CT Shore Program (45 designed shore sites)	17		
New York	19		
New Jersey	18	3 fish	<b>2019:</b> May 24- September 21 <b>2020:</b> May 22-September 19
NJ Shore program site (ISBSP)	16	2 fish	
New Jersey/Delaware Bay COLREGS	17	3 fish	
Delaware	16.5	4 fish	January 1- December 31
Maryland			
PRFC			
Virginia			
North Carolina	15	4 fish	<b>2019:</b> January 1-September 3 <b>2020:</b> August 16-September 30 <sup>b</sup>

<sup>a</sup> Rhode Island's shore program includes a combined possession limit of 6 fish, no more than 2 fish at 17-inch minimum size limit.

<sup>b</sup> North Carolina restricted the recreational season at the end of 2019 and for 2020 for all flounders in North Carolina (southern, gulf, and summer flounder) due to the need to end overfishing on southern flounder. North Carolina manages all flounder in the recreational fishery under the same regulations.

In July 2018, MRIP released revisions to their time series of recreational catch and landings estimates based on adjustments for a revised angler intercept methodology and a new effort estimation methodology (i.e., a transition from a telephone-based effort survey to a mail-based effort survey). The revised estimates of catch and landings are several times higher than the previous estimates for shore and private boat modes, substantially raising the overall summer flounder catch and harvest estimates. On average, the new landings estimates for summer flounder (in pounds) are 1.8 times higher over the time series 1981-2017, and 2.3 times higher over the past 10 years (2008-2017). In 2017, new estimates of landings in pounds were 3.16 times higher than the previous estimates.

Revised MRIP estimates indicate that recreational catch for summer flounder peaked in 2010 with 58.89 million fish caught. Recreational harvest peaked in 1983, with 25.78 million fish landed, totaling 36.74 million pounds. Recreational catch reached a low in 1989 with 5.06 million fish caught. Recreational harvest in numbers of fish reached a low in 2019 with 2.38 million fish landed (7.80 million pounds), while recreational harvest in pounds was lowest in 1989 at 5.66 million pounds (Figure 6).<sup>6</sup>



**Figure 6:** MRIP estimates of recreational summer flounder harvest in numbers of fish and pounds and catch in numbers of fish, ME - NC, 1981 - 2019. All series represent revised MRIP estimates.<sup>6</sup>

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2019, 821 vessels held summer flounder federal party/charter permits.<sup>7</sup> Many of these vessels also hold recreational permits for scup and black sea bass.

On average, an estimated 83 percent of the recreational landings (in numbers of fish) occurred in state waters over the past ten years, and about 79 percent of landings came from state waters in 2019 (Table 8). The majority of summer flounder were landed in New York and New Jersey in 2019 (70%; Table 9).<sup>6</sup>

About 87% of recreational summer flounder harvest in 2019 was from anglers who fished on private or rental boats. About 3% was from party or charter boats, and about 10% was from anglers fishing from shore. The revised MRIP methodology resulted in an increase in the amount of harvest estimated to occur from private and shore modes while making only minor changes to the estimates for party/charter modes, modifying the percentages attributable to each mode (Table 10).<sup>6</sup>

**Table 8:** Estimated percentage of summer flounder recreational landings (in numbers of fish) from state vs. federal waters, Maine through North Carolina, 2010-2019 (revised MRIP data).<sup>6</sup>

Year	State <= 3 mi	EEZ > 3 mi
2010	93%	7%
2011	94%	6%
2012	86%	14%
2013	77%	23%
2014	78%	22%
2015	82%	18%
2016	79%	21%
2017	80%	20%
2018	83%	17%
2019	79%	21%
<b>Avg. 2010 - 2019</b>	<b>83%</b>	<b>17%</b>
<b>Avg. 2017 - 2019</b>	<b>81%</b>	<b>19%</b>

**Table 9:** State contribution (as a percentage) to total recreational landings of summer flounder (in numbers of fish), from Maine through North Carolina, 2017-2019 (revised MRIP data).<sup>6</sup>

State	2017	2018	2019	2017-2019 average
Maine	0%	0%	0%	0%
New Hampshire	0%	0%	0%	0%
Massachusetts	2%	3%	2%	2%
Rhode Island	5%	7%	9%	7%
Connecticut	4%	6%	4%	5%
New York	37%	27%	24%	29%
New Jersey	38%	43%	46%	43%
Delaware	3%	4%	4%	3%
Maryland	2%	2%	3%	2%
Virginia	6%	6%	6%	6%
North Carolina	3%	2%	1%	2%
Total	100%	100%	100%	100%

**Table 10:** The percent of summer flounder landings (in number of fish) by recreational fishing mode, Maine through North Carolina, 1981-2019 (revised MRIP data).<sup>6</sup>

Year	Shore	Party/Charter	Private/Rental	Total number of fish landed (millions)
2010	10%	4%	86%	3.51
2011	4%	3%	93%	4.33
2012	9%	3%	88%	5.74
2013	11%	4%	85%	6.60
2014	7%	8%	84%	5.36
2015	7%	7%	86%	4.03
2016	8%	4%	89%	4.30
2017	13%	4%	83%	3.17
2018	11%	6%	84%	2.41
2019	10%	3%	87%	2.38
<b>% of Total, 1981-2019</b>	14%	7%	78%	--
<b>% of Total, 2015-2019</b>	9%	6%	85%	--

## References

- <sup>1</sup> Packer, D. B, S. J. Griesbach, P. L. Berrien, C. A. Zetlin, D. L. Johnson, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-151.
- <sup>2</sup> Northeast Fisheries Science Center. 2019. Data Update for Summer Flounder.
- <sup>3</sup> Northeast Fisheries Science Center (NEFSC). 2019. 66th Northeast Regional Stock Assessment Workshop (66th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 19-01; 40 p. Available from: <https://www.nefsc.noaa.gov/publications/crd/crd1908/>.
- <sup>4</sup> Northeast Fisheries Science Center. 2020. Data Update for Summer Flounder.
- <sup>5</sup> Unpublished NMFS dealer data as of May 7, 2020.
- <sup>6</sup> Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 12, 2020. Available at: <http://www.st.nmfs.noaa.gov/recreational-fisheries/index>.
- <sup>7</sup> Unpublished NMFS permit data as of January 17, 2020.
- <sup>8</sup> Unpublished NMFS Vessel Trip Report (VTR) data as of February 28, 2020.