



Summer Flounder Advisory Panel Information Document¹

June 2014

Management System

The Fishery Management Plan (FMP) for summer flounder became effective in 1988, and established the management unit for summer flounder (*Paralichthys dentatus*) as the U.S. waters in the western Atlantic Ocean from the southern border of North Carolina northward to the U.S.-Canadian border. The FMP also established measures to ensure effective management of the summer flounder resource. There are two management entities that work cooperatively to develop fishery regulations for this species: the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fishery Management Council (MAFMC), in conjunction with the National Marine Fisheries Service (NMFS) 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).

The commercial and recreational fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. Summer flounder was under a stock rebuilding strategy beginning in 2000 until it was declared rebuilt in 2011. 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>.

Basic Biology

Detailed information on summer flounder life history and habitat requirements can be found in the document titled "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999), available at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. Information contained in that document is summarized below.

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.

¹Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of May 2014, unless otherwise noted.

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. They are opportunistic feeders, and 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.

Male and female growth rates vary substantially, with males growing more slowly. Males rarely live longer than 10 years, whereas females may live for up to 20 years (Bolz et al. 1999) and attain weights of about 25 lbs. Based on an analysis of NEFSC Fall Survey maturity data from 1992-1997, the median length at maturity (50th percentile, L_{50}) was estimated as 27.0 cm (10.6 inches) for male summer flounder, 30.3 cm (11.9 inches) for female summer flounder, and 27.6 cm (10.9 inches) for the sexes combined (NEFSC 2008). The median age of maturity (50th percentile, A_{50}) for summer flounder was determined to be 1.1 years for males, 1.4 years for females, and 1.2 years for both sexes combined (NEFSC 2008).

Status of the Stock

An age-structured assessment program (ASAP) was used in the 2013 peer-reviewed summer flounder stock benchmark stock assessment (57th Stock Assessment Workshop; NEFSC 2013). The final report, as well as the Stock Assessment Review Committee (SARC) panelist reports, is available online at the NEFSC website: <http://www.nefsc.noaa.gov/saw/reports.html>. Previous stock assessment reports, assessment updates, and peer review panelist reports are also available at the site above.

The 2013 benchmark assessment indicated that the summer flounder stock was not overfished or subject to overfishing in 2012, relative to the new biological reference points derived from the SAW 57 assessment. Fishing mortality (F) was estimated to be 0.285 in 2012, below the updated threshold fishing mortality reference point of $F_{MSY} = 0.309$ (Figure 1). Spawning Stock Biomass (SSB) was estimated to be 113.0 million lb (51,238 mt) in 2012, 18% below the updated $SSB_{MSY} = 137.6$ million lb (62,394 mt).

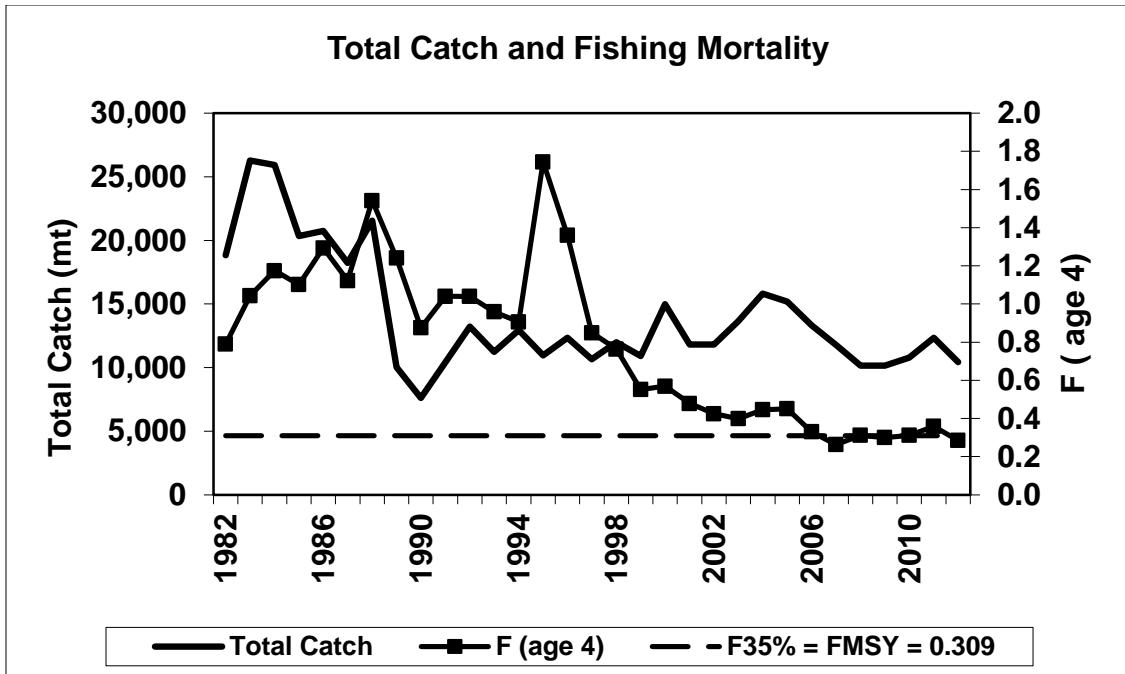


Figure 1: Total fishery catch and fully-recruited fishing mortality (F, peak at age 4) of summer flounder. The horizontal dashed line is the 2013 SAW/SARC57 fishing mortality reference point proxy. Source: NEFSC 2013.

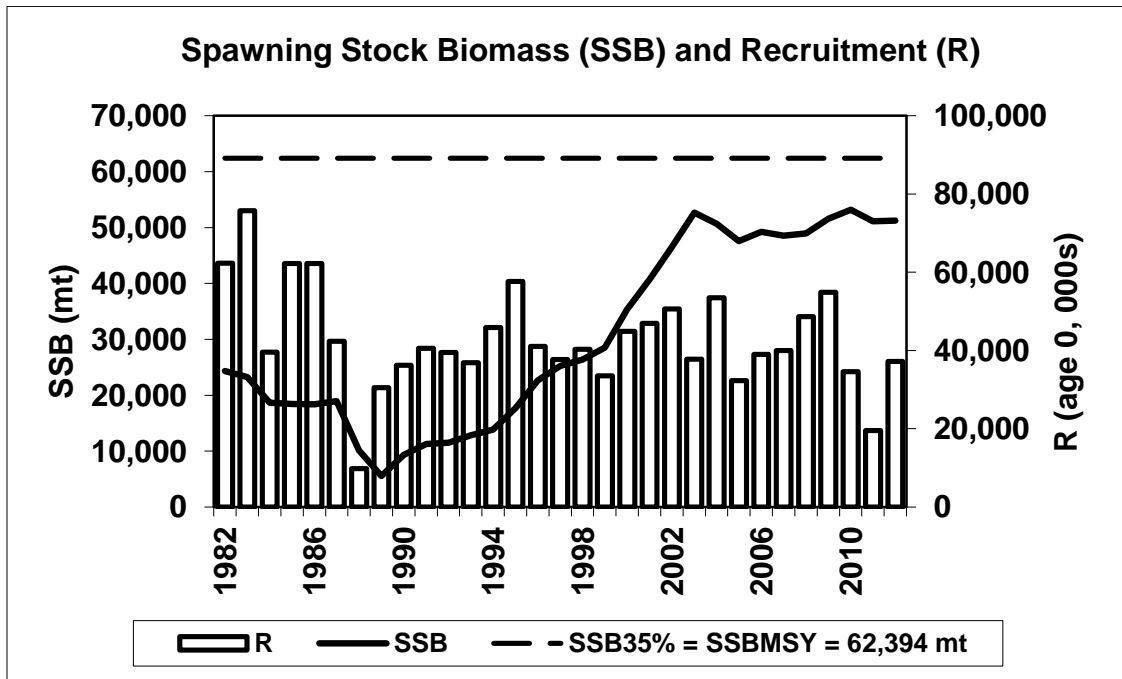


Figure 2: Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) by calendar year. The horizontal dashed line is the 2013 SAW/SARC57 biomass reference point proxy. Source: NEFSC 2013.

Fishery Performance

There are significant commercial and recreational fisheries for summer flounder. The summer flounder stock is managed primarily using output controls (catch and landings limits), with 60 percent of the landings being allocated to the commercial fishery as a commercial quota and 40 percent allocated to the recreational fishery as a recreational harvest limit.

Table 1 summarizes the summer flounder management measures for the 2003-2015 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2009, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest).

Total (commercial and recreational) landings declined in the early 1980's, dropping to a low of 14.4 million lb in 1990, and in 2013 were about 19.6 million lb total (Figure 3).

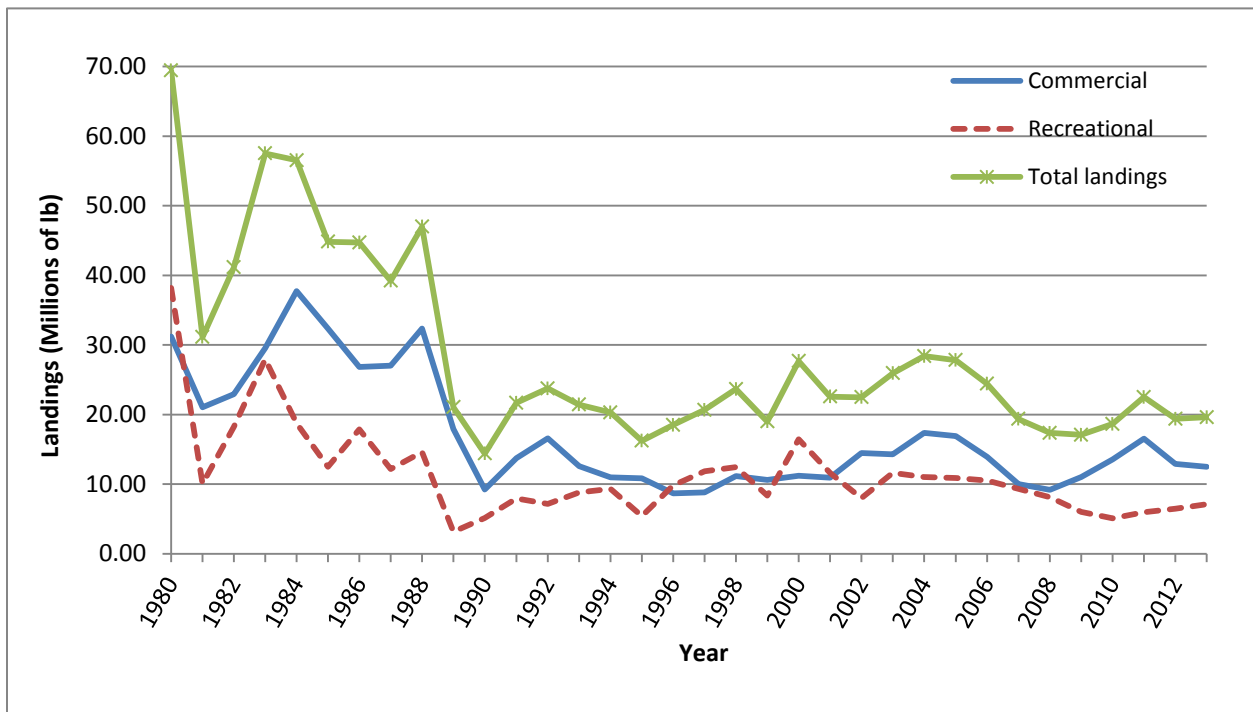


Figure 3: Commercial and Recreational U.S. Summer Flounder Landings (Pounds) from Maine-North Carolina, 1980-2013.

Table 1: Summary of summer flounder management measures and landings for 2003 through 2015.

Management measures	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ^a
ABC (m lb)	NA	NA	NA	NA	NA	NA	21.50	25.5	33.95	25.58	22.34	21.94	22.77
TAC (m lb)	NA	NA	NA	NA	NA	NA	20.90	25.5	33.95	25.58	22.34	21.94	22.77
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	12.11	12.87	13.34
Com. quota-adjusted (m lb) ^b	13.87	16.76	17.90	13.94	9.79	9.32	10.74	12.79	17.38	12.73	11.44	10.51	10.77
Com. landings	14.30	17.37	16.91	13.92	10.02	9.21	11.05	13.55	16.57	12.91	12.49	NA	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.58	10.23	9.07	9.44
Rec. harvest limit-adjusted (m lb) ^b	9.28	11.21	11.98	9.29	6.68	6.21	7.16	8.59	11.58	8.49	7.63	7.01	7.16
Rec. landings	11.64	11.02	10.92	10.51	9.34	8.15	6.03	5.11	5.96	6.49	7.12	NA	NA
Com. fish size (in)	14	14	14	14	14	14	14	14	14	14	14	14	14
Com. Min. mesh size (in, diamond) ^c	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Recreational measures ^d	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	NA

^aThese reflect the regulations currently implemented for summer flounder in 2015, however, the Council and ASFMC will review recent fishery data in August 2014 and may revise as necessary. ^bAdjusted for Research Set-Aside and projected discards. ^cWhole Net. ^dState- or region-specific conservation equivalency (CE) measures. NA=Not applicable or not yet available.

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for summer flounder. Permit data for 2013 indicates that 824 vessels held commercial permits for summer flounder. The commercial quota is divided among the states based on the allocation percentages given in Table 2, and each state sets measures to achieve their state-specific commercial quotas.

Table 2: 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

National Marine Fisheries Service statistical areas are shown in Figure 4, with areas that accounted for more than 5 percent of the summer flounder catch in 2013 highlighted. VTR data suggest that statistical area 537 was responsible for the highest percentage of the catch, with statistical area 612 having the majority of trips that caught summer flounder (Table 3).

Table 3: Statistical areas that accounted for at least 5 percent of the summer flounder catch in 2013, with associated number of trips. Source: NMFS VTR data.

Statistical Area	Summer Flounder Catch (percent)	Summer Flounder Trips (N)
537	31.15	1,609
616	14.01	483
526	9.52	107
613	8.23	1,768
612	7.66	1,806

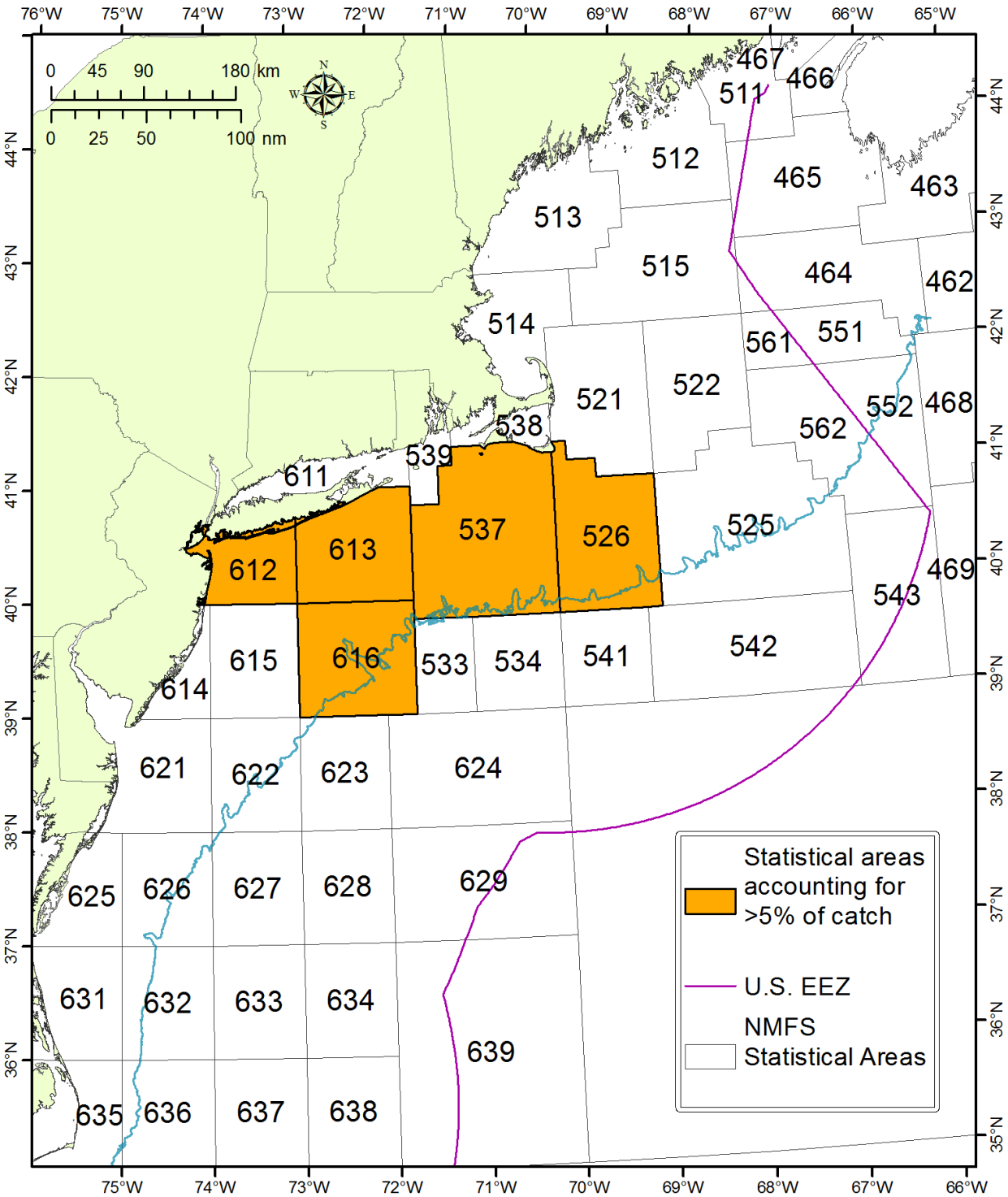


Figure 4: National Marine Fisheries Service Statistical Areas, showing statistical areas accounting for more than 5% of the commercial summer flounder catch in 2013.

Based on VTR data for 2013, the bulk of the summer flounder landings were taken by bottom otter trawls (97 percent), followed by bottom scallop trawls (1 percent), with other gear types (e.g. hand lines, scallop dredges, sink gill nets) each accounting for 1 percent or less of landings. Current regulations require a 14 inch total length minimum fish size in the commercial fishery and a 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 in the winter and 100 lb in the summer.

Summer flounder ex-vessel revenues based on dealer data have ranged from \$14.3 to \$30.2 million for the 1994 through 2013 period. The mean price for summer flounder (unadjusted) has ranged from a low of \$1.34/lb in 2002 to a high of \$2.38/lb in 2008 (Figure 5). In 2013, 12.49 million pounds of summer flounder were landed generating \$29.2 million in revenues (\$2.34/lb).

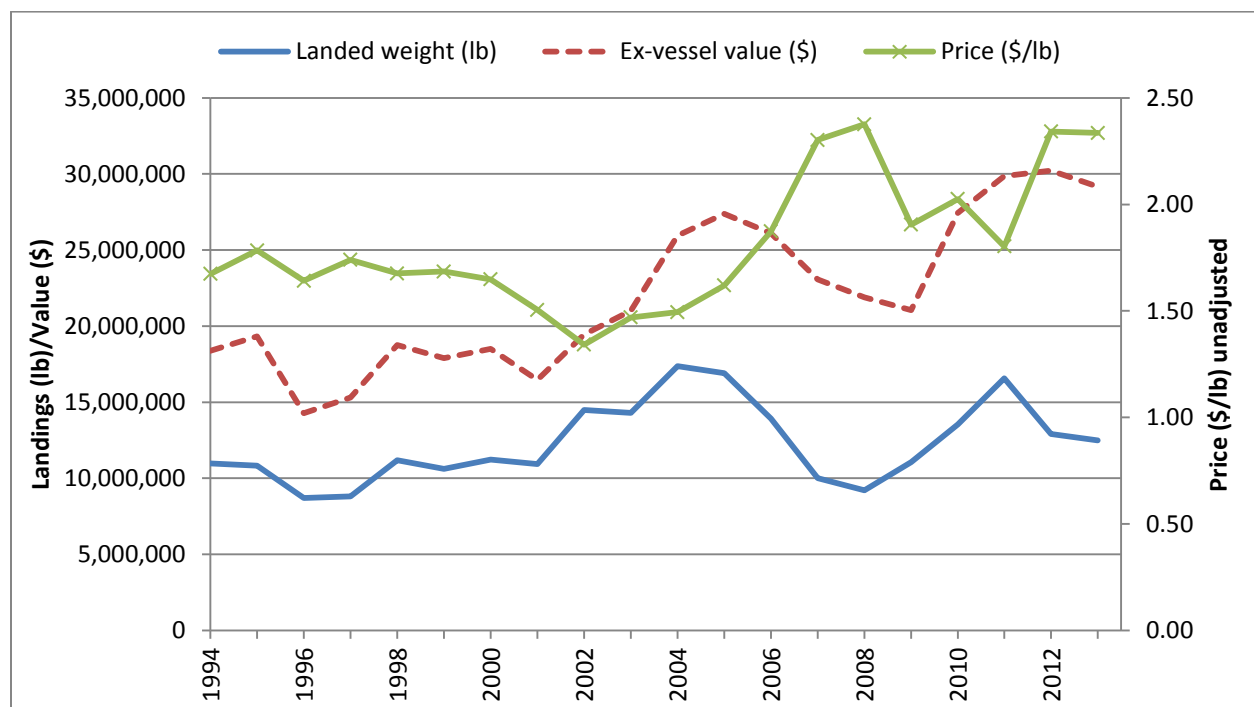


Figure 5: Landings, ex-vessel value, and price (unadjusted) for summer flounder, Maine through North Carolina, 1994-2013.

To examine recent landings patterns among ports, 2013 NMFS dealer data are used. The top commercial landings ports for summer flounder by pounds landed are shown in Table 4. A “top port” is defined as any port that landed at least 100,000 lb of summer flounder. Related data for the recreational fisheries are shown in subsequent sections. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels. The ports and communities that are dependent on summer flounder are fully described in Amendment 13 to the FMP. Additional information can be found in the document titled "Community Profiles for the Northeast US Fisheries":

<http://www.nefsc.noaa.gov/read/socialsci/pdf/communityProfiles/introduction.pdf/>.

Table 4: Top ports of landing (in lb) for summer flounder (FLK), based on NMFS 2013 dealer data. Since this table includes only the “top ports,” it may not include all of the landings for the year.

Port	Landings of FLK (lb)	# FLK Vessels
NEWPORT NEWS, VA	2,197,269	48
HAMPTON, VA	1,921,458	46
POINT JUDITH, RI	1,917,483	132
CHINCOTEAGUE, VA	1,209,445	43
PT. PLEASANT, NJ	945,652	51
MONTAUK, NY	545,491	83
CAPE MAY, NJ	449,450	60
NEW BEDFORD, MA	424,614	70
BELFORD, NJ	340,146	19
BEAUFORT, NC	285,310	25
STONINGTON, CT	194,683	20
LONG BEACH/BARNEGAT LIGHT, NJ	187,421	27
WOODS HOLE, MA	174,334	27
OCEAN CITY, MD	172,981	15
HAMPTON BAY, NY	169,473	30
MATTITUCK, NY	123,959	4
NANTUCKET, MA	100,979	12

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (57) who bought summer flounder in 2013 (Table 5). All dealers bought approximately \$29.2 million worth of summer flounder in 2013.

Table 5: Dealers reporting buying summer flounder, by state in 2013. Note: C = Confidential.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC
	39	38	16	57	34	C	4	19	29

Recreational Fishery

There is a significant recreational fishery for summer flounder in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. To manage this fishery, state-specific conservation equivalency was developed and has been used every year since 2001 (Table 1). Under conservation equivalency, state- or region- specific measures are developed through the ASMFC, and are submitted to NMFS. 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. Those fishermen fishing in Federal waters are then subject to the measures of the state in which they land summer flounder. Typically, conservation equivalency has been implemented on a state-specific basis. For 2014, the ASFMC voted to implement regional-based conservation equivalency measures, given in Table 6.

Table 6: Summer flounder recreational fishing measures in 2014, by state, under regional conservation equivalency. 2014 regions include: 1) Massachusetts, 2) Rhode Island, 3) Connecticut, New York, and New Jersey, 4) Delaware, Maryland, PRFC, and Virginia, and 5) North Carolina.²

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16	5 fish	May 22-September 30
Rhode Island	18	8 fish	May 1-December 31
Connecticut	18	5 fish	May 17-September 21
CT Shore Program (45 designated shore sites)	16		
New York	18	5 fish	May 17-September 21
New Jersey	18	5 fish	May 23-September 27
NJ Pilot Shore Program (1 site)	16	2 fish	(Tentatively) May 23-September 27
Delaware	16	4 fish	All year
Maryland	16	4 fish	All year
Potomac River Fish. Commission (PRFC)	16	4 fish	All year
Virginia	16	4 fish	All year
North Carolina	15	6 fish	All year

Recreational data have been available through the Marine Recreational Information Program (MRIP) since 2004, and prior to 2004 were available through the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational catch and landings for summer flounder peaked in 1983 and were at the lowest levels in 1989 (Table 7).

² Under regional conservation equivalency, each region must have the same minimum size limit, bag limit, and same number of open days in their season.

Table 7: Recreational summer flounder landings data from the NMFS recreational statistics databases, 1981-2013.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	13,579	9,567	10,081
1982	23,562	15,473	18,233
1983	32,062	20,996	27,969
1984	29,785	17,475	18,765
1985	13,526	11,066	12,490
1986	25,292	11,621	17,861
1987	21,023	7,865	12,167
1988	17,171	9,960	14,624
1989	2,677	1,717	3,158
1990	9,101	3,794	5,134
1991	16,075	6,068	7,960
1992	11,910	5,002	7,148
1993	22,904	6,494	8,831
1994	17,725	6,703	9,328
1995	16,308	3,326	5,421
1996	18,994	6,997	9,820
1997	20,027	7,167	11,866
1998	22,086	6,979	12,477
1999	21,378	4,107	8,366
2000	25,384	7,801	16,468
2001	28,187	5,294	11,637
2002	16,674	3,262	8,008
2003	20,532	4,559	11,638
2004	20,336	4,316	11,022
2005	25,806	4,027	10,915
2006	21,400	3,950	10,505
2007	20,732	3,108	9,337
2008	22,897	2,350	8,151
2009	24,085	1,806	6,030
2010	23,722	1,501	5,108
2011	21,559	1,840	5,956
2012	16,528	2,272	6,490
2013	15,789	2,457	7,124

When anglers are intercepted through the surveys conducted for the recreational statistics programs, they are asked about where the majority of their fish were caught (i.e., inland, state waters (<=3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of summer flounder are landed recreationally. These data indicate that on average, about 90 percent of the landings (in numbers of fish) have occurred in state waters over the past ten years, and about 77 percent of landings came from state waters in 2013 (Table 8).

Table 8: Percentage of summer flounder recreational landings (MRIP Type A+B1 in number of fish) by area (state vs. Federal waters), Maine through North Carolina, 2004-2013. Area information is self-reported based on where the majority of fishing activity occurred per angler trip.

Year	State <= 3 mi	EEZ > 3 mi
2004	87.7%	12.3%
2005	81.2%	18.8%
2006	90.4%	10.0%
2007	88.9%	11.1%
2008	96.8%	3.5%
2009	90.8%	9.2%
2010	92.3%	7.7%
2011	95.4%	4.7%
2012	87.8%	12.3%
2013	77.1%	22.9%
Avg. 2004 - 2013	88.9%	11.3%
Avg. 2011 - 2013	86.8%	13.3%

Table 9: State contribution (as a percentage) to total recreational landings of summer flounder, (MRIP Type A+B1 in number of fish), from Maine through North Carolina, 2012 and 2013.

State	2012	2013
Maine	0.0%	0.0%
New Hampshire	0.0%	0.0%
Massachusetts	3.3%	1.3%
Rhode Island	4.5%	5.2%
Connecticut	2.8%	11.0%
New York	22.4%	20.4%
New Jersey	49.7%	48.7%
Delaware	2.0%	2.0%
Maryland	1.0%	2.0%
Virginia	11.4%	7.6%
North Carolina	2.8%	1.8%
Total	100%	100%

In 2013, there were 791 recreational vessels (i.e., party and charter vessels) that held summer flounder Federal recreational permits. Many of these vessels also hold recreational permits for scup and black sea bass. Landings by mode indicate that private/rental fishermen are responsible for the majority of summer flounder landings (Table 10).

Table 10: The number of summer flounder landed from Maine through North Carolina by mode, 1981-2013.

Year	Shore	Party/Charter	Private/Rental
1981	3,145,685	1,362,253	5,058,634
1982	1,120,527	5,936,005	8,416,175
1983	3,963,678	3,574,224	13,458,399
1984	1,355,597	2,495,734	13,623,844
1985	786,186	1,152,247	9,127,757
1986	1,237,032	1,608,908	8,774,920
1987	406,094	1,150,095	6,308,572
1988	945,862	1,134,356	7,879,445
1989	180,268	141,318	1,395,174
1990	261,899	413,241	3,118,444
1991	565,402	597,609	4,904,635
1992	275,472	375,244	4,351,389
1993	342,226	1,013,463	5,138,354
1994	447,183	836,361	5,419,147
1995	241,904	267,348	2,816,468
1996	206,929	659,878	6,130,181
1997	255,063	930,635	5,981,122
1998	316,312	360,777	6,302,003
1999	213,444	300,807	3,592,740
2000	569,613	648,754	6,582,710
2001	226,994	329,701	4,736,914
2002	154,960	261,552	2,845,644
2003	203,719	389,140	3,965,814
2004	200,367	463,777	3,652,355
2005	104,294	498,611	3,424,556
2006	154,416	315,934	3,479,936
2007	98,419	499,161	2,509,999
2008	79,338	171,950	2,098,582
2009	62,693	176,999	1,566,491
2010	59,810	160,108	1,281,546
2011	34,850	137,786	1,667,241
2012	106,342	169,476	1,996,407
2013	132,684	208,207	2,116,398
% of Total, 1981-2013	9%	14%	78%
% of Total, 2009-2013	4%	9%	87%

The NMFS angler expenditure survey summarizes a variety of costs associated with recreational fishing in the Northeast (Table 11). In addition, Steinback et al., 2009 summarized the reasons for fishing, with a majority of anglers (about 85 percent) fishing either mostly or fully for recreational purposes (Table 12).

Table 11: Average daily trip expenditures by recreational fishermen in the Northeast region by mode, in 2011. Source: Lovell et al. 2013.

Expenditures	\$		
	Party/Charter	Private/Rental	Shore
Auto Fuel	24.92	13.50	13.25
Auto Rental	0.43	0.00	0.09
Bait	0.47	4.98	5.09
Boat Rental	0.52	18.40	0.00
Charter Fees	113.44	0.05	0.00
Crew Tips	9.95	0.00	0.00
Fish Processing	0.01	0.00	0.00
Food from Grocery Stores	12.09	6.11	6.22
Food from Restaurants	11.25	2.28	4.07
Gifts & Souvenirs	3.57	0.03	0.57
Ice	0.56	1.04	0.57
Lodging	17.42	1.35	7.69
Parking & Site Access	0.67	0.82	1.27
Public Transportation	1.56	0.05	0.15
Tournament Fees	3.77	0.00	0.00
Total	200.63	48.62	38.96

Table 12: Purpose of Marine Recreational Fishing in the Northeast. Source: Steinback et al., 2009.

	Percent	Number of anglers in 2005 (thousands)
All for food or income	2.1	92.4
Mostly for food or income	<1.0	34.3
Both for recreation and for food or income	11.7	514.8
Mostly for recreation	13.2	580.8
All for recreation	72.2	3,176.8

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