

**DRAFT**  
**2014 Review of the**  
**Chesapeake Bay Summer Flounder Fishery Management Plan**



**July 2014**

**Maryland Department of Natural Resources**  
**Fisheries Service**  
**Tawes State Office Building**  
**580 Taylor Avenue**  
**Annapolis, Maryland 21401**  
[www.dnr.maryland.gov/](http://www.dnr.maryland.gov/)



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Chesapeake Bay Summer Flounder Fishery Management Plan**



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**Plan Review Team**

Fishery Management Plans Program Staff  
Coastal Fisheries Program Staff  
Fisheries Service Management Team  
Sport Fisheries Advisory Commission  
Tidal Fisheries Advisory Commission

**Approved by:**

Thomas J. O'Connell  
Director, Fisheries Service

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## **List of Acronyms**

ACL – Annual Catch Limit  
ASMFC – Atlantic States Marine Fisheries Commission  
COMAR – Code of Maryland Regulations  
BRP – Biological Reference Point  
DNR – Department of Natural Resources  
F – Fishing Mortality  
FMP – Fishery Management Plan  
FS – Fisheries Service  
IFQ – Individual Fishing Quota  
M – Natural Mortality  
MAFMC –Mid-Atlantic Fishery Management Council  
MRIP – Marine Recreational Information Program  
NERO – Northeast Regional Office  
NMFS – National Marine Fisheries Service  
PRFC – Potomac River Fisheries Commission  
PRT – Plan Review Team  
PSE – Percent Standard Error  
SF–Summer Flounder  
SFAC – Sport Fisheries Advisory Commission  
SSB – Spawning Stock Biomass  
TFAC –Tidal Fisheries Advisory Commission

## Summary

The Maryland Department of Natural Resources Fisheries Service Plan Review Team evaluated the 1991 Chesapeake Bay Summer Flounder Fishery Management Plan and the 1998 Amendment #1 in 2014 to determine if the management framework remains appropriate, needs to be amended, or should be completely revised. The Summer Flounder Fishery Management Plan, Amendment #1, and the Fisheries Allocation Review Policy (Maryland Department of Natural Resources, 2012) were used to guide the review.

A 2013 benchmark stock assessment was completed for the coastal summer flounder (*Paralichthys dentatus*) stock. The assessment utilized data through 2012 and resulted in new (updated) biological reference points. Based on the recent coastal stock assessment, the stock is not overfished and overfishing is not occurring. The stock was declared rebuilt in 2010 and spawning stock biomass is currently about 82% of the target reference point. Summer flounder are managed under an annual quota with 60% allocated to the commercial fishery and 40% allocated to the recreational fishery. One factor for future examination is an apparent poleward shift in biomass along the Atlantic coast. Biomass shift may be occurring due to an increase in the abundance of larger fish further north as a result of harvest restrictions and/or increased water temperatures due to climate change.

In 2014, states began to implement a regional approach to managing the recreational summer flounder fishery along the Atlantic coast instead of using conservation equivalency. The rationale for a shift to regional management was that state-by-state conservation equivalency did not adequately accommodate the changes in summer flounder distribution and fishery characteristics (Atlantic States Marine Fisheries Commission, 2014a). Regional management is anticipated to provide a more adaptive and equitable management framework among neighboring states. Each region will have uniform regulations among the states. Maryland, Delaware, and Virginia constitute a single region and the regulations among these states are the same: 16" minimum size and a four fish per person per day creel limit. Management will revert back to conservation equivalency in 2015, but states may continue to voluntarily form management regions. Coastal management regions are also being considered for the commercial fishery in regards to ports of landing. Over the next three years the Mid-Atlantic Fishery Management Council in coordination with the Atlantic States Marine Fisheries Commission will be reviewing and revising the coastal fishery management framework for summer flounder. This could result in revision of the goals and objectives of both the Mid-Atlantic Fisheries Management Council and the Atlantic States Marine Fisheries Commission fisheries management plans.

The Fisheries Service Plan Review Team determined that the goal, objectives, strategies, and actions established in the Summer Flounder Fishery Management Plan and Amendment #1 remain appropriate for current management measures set forth by the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council. The Fisheries Service Plan Review Team recommends that the Summer Flounder Fishery Management Plan be reviewed again after the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission have completed their management framework review, currently scheduled for completion in 2017.

## Status of the Fishery Management Plan (FMP)

Date of FMP Approval:	1991
Amendments:	1998
FMP Review Dates:	1992, 1994, 1995, 2000, 2001, 2005, 2014
FMP Updates:	2007 - 2014

Fishery management plans provide a framework for how a fishery resource will be managed based on a species' life history, habitat, ecosystem considerations, and fishery utilization. Over time, the status of a resource can change and new issues arise. Strategies and actions within a plan need to be periodically reviewed and evaluated to ensure the management framework is still appropriate or if it needs to be amended or revised to address significant changes. For specific details on the process for reviewing plans and developing or amending plans, see Appendices 1 - 3.

The Chesapeake Bay Summer Flounder Fishery Management Plan (SF FMP) was developed in 1991 and amended in 1998. The plan has been periodically reviewed since its development and annually updated since 2007. The Department of Natural Resources (DNR) has authority to regulate summer flounder through the Code of Maryland Regulations (COMAR 08.02.01.01).

During 2014, a Fisheries Service Plan Review Team (FS PRT) was convened to review the plan. The FS PRT was comprised of staff from the FMP program (Marek Topolski, Nancy Butowski), Coastal Fisheries Program (Carrie Kennedy, Steve Doctor), and Fisheries Service Management Team (Mike Luisi). Additional staff from Fisheries Service participated in the SF FMP review as well as members of the Sport Fisheries Advisory Commission (SFAC) and the Tidal Fisheries Advisory Commission (TFAC) (*Note: This draft does not yet incorporate input from SFAC or TFAC as their review is occurring now.*). The goal of the 1991 SF FMP is to:

*“Enhance and perpetuate summer flounder stocks in the Chesapeake Bay and its tributaries, and throughout their Atlantic coast range, so as to generate optimum long-term ecological, social and economic benefits from their commercial and recreational harvest and utilization of time.”*

In order to meet the goal, seven objectives were identified:

- 1) Follow guidelines established by the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council for coastwide management of summer flounder stocks and make Bay regulatory actions compatible where possible.*
- 2) Promote protection of the resource by maintaining a clear distinction between conservation goals and allocation issues.*

- 3) *Maintain summer flounder spawning stocks at a size which minimizes the possibility of recruitment failure and determine the effects of environmental factors on year-class strength.*
- 4) *Promote the cooperative interstate collection of economic, social and biological data required to effectively monitor and assess management efforts relative to the overall goal.*
- 5) *Improve collection of catch and standardized effort statistics in the summer flounder fisheries.*
- 6) *Promote fair allocation of allowable harvest among various components of the fishery.*
- 7) *Continue to provide guidance for the development of water quality goals and habitat protection necessary to protect the summer flounder population within the Bay and state coastal waters.*

The Chesapeake Bay SF FMP, including Amendment #1, adopted the management requirements established by the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fishery Management Council (MAFMC). While ASMFC and MAFMC cooperatively manage summer flounder, either organization may develop separate amendments to address circumstances unique to how the fisheries operate in state versus federal waters. The ASMFC developed a summer flounder management plan for state waters in 1982 and the MAFMC developed a FMP for federal waters in 1988. The ASMFC has since adopted all amendments and framework adjustments implemented by the MAFMC except for two: Amendment 1 which implemented a 5 ½ inch minimum mesh for trawl net cod ends and Amendment 11 which modified commercial permitting requirements. The ASMFC Addendum XXV was implemented in 2014 to test the effectiveness of regional conservation equivalency. The first seven of the MAFMC's amendments implemented rules focused on rebuilding the summer flounder stock. Amendments 8 and 9 were developed to include scup and black sea bass, respectively, which are also caught by the commercial summer flounder trawl fishery. State-specific management options (conservation equivalency) were introduced with the MAFMC's Framework 2 (2001) and expanded to allow for region-specific management in 2006 (Framework 6). Amendment 15 (2011) formalized the process for determining catch limits and addressing uncertainty: important considerations for preventing overfishing and rebuilding stocks. Amendment 19 (2014) changed recreational harvest accountability so that overages are not deducted from the following years' quota unless warranted but adjusted by changes to size, bag limit, and season to reduce harvest in the following year. A summary of MAFMC amendments to the summer flounder FMP is provided in Appendix 4.

The FS PRT agreed that the goal and objectives within the Chesapeake Bay Summer Flounder Fishery Management Plan and Amendment #1 continue to be appropriate for managing the summer flounder resource.

### **Status of the Stock**

Summer flounder are predominantly found in coastal waters from Cape Fear, North Carolina north to Cape Cod, Massachusetts; though they inhabit waters from Florida's east coast to Nova Scotia, Canada (Atlantic States Marine Fisheries Commission, 2014b). Currently, summer

flounder are managed as a single unit; though, evidence exists that there are separate northern and southern stocks (Terceiro, 2011). The northern stock also may have two separate spawning aggregations (Terceiro, 2011). A spatial shift has been detected for the summer flounder stock with the northern boundary moving poleward (Nye, Link, Hare, & Overholtz, 2009) along with seasonal shifts in biomass (Bell, Hare, Manderson, & Richardson, 2014).

A benchmark stock assessment was completed for the coastal summer flounder stock in 2013. As a result, new (updated) biological reference points (BRP) were developed and adopted. Based on 2013 assessment (data through 2012), the summer flounder stock is not overfished and overfishing is not occurring. Fishing mortality (F) has decreased to an estimated 0.285 and is below the new BRP,  $F_{35\%} = 0.309$ . Spawning stock biomass (SSB) has decreased slightly since 2010. The SSB was estimated to be 113.0 million pounds. The SSB is about 82% of the new BRP,  $SSB_{35\%} = 137.5$  million pounds (NEFSC 2013). Since the mid-1990s, management measures have been successful at decreasing F and increasing SSB. The coastal summer flounder stock was declared rebuilt in 2010. Under the current F, the SSB is expected to increase over the next few years.

### **Status of the Fishery**

Both commercial and recreational summer flounder fisheries are important in Maryland and Virginia. Summer flounder are commercially harvested by trawlers from coastal Atlantic waters, but hook-and-line gear is also used. Maryland commercial landings fluctuated between 143,000 lbs and 1.7 million lbs during the years 1940 to 1989. Since 1989, landings have averaged 236,000 lbs annually (Table 1, Figure 1). In Virginia, landings have varied from 1.5 – 10.0 million lbs during the years 1950 to 2013 (Figure 1).

Estimates of recreational harvest began in 1981. In Maryland, summer flounder landings varied between 64,200 fish and 831,000 fish from 1981 through 2002 (Table 2, Figure 2). Since 2003, estimated recreational landings have remained below 65,000 fish except in 2005 and 2007 (Table 2, Figure 2). The 2013 estimated recreational landings of summer flounder were 51,140 fish. The mean percent standard error or PSE (a measure of precision) has been 23.5 (1981-2013). Recreational estimates with PSEs over 25 should be used with caution. We believe consistent regulations across both the Chesapeake Bay and the state waters of the Atlantic (implemented in 2010), combined with the redesign of the recreational survey (ongoing), are both partially responsible for Maryland's recent harvest estimates coming in significantly below target. Recreational landings of summer flounder in Virginia reached a high of 6.6 million fish in 1983. Estimated harvest from 1985 to 2007 varied without trend between 400,000 fish and 1.34 million fish (Figure 2). Since 2008 the mean annual harvest estimate has decreased to 262,000 summer flounder (Figure 2). The 2013 estimated recreational harvest was 188,000 fish. Mean PSE was 16.5.

### **Status of Management Strategies and Actions**

The SF FMP strategies can be broadly defined under three categories:



- 1) *Fishing Mortality: Bay jurisdictions will evaluate a number of alternatives to control directed fishing mortality and improve protection of summer flounder beyond age I. Management options include restrictions and hook-and-line creel limits. Management agencies will continue to participate in deliberations to protect small flounder in other coastal states and in the Exclusive Economic Zone.*
- 2) *Stock assessment and research needs: Atlantic coast databases are limited concerning harvest, fishing effort and biological characteristics of the harvest and fishery independent measures of summer flounder stocks. Specific research to address these deficiencies will be identified.*
- 3) *Habitat Issues: The jurisdictions will continue their efforts to improve water quality and define habitat requirements for the living resources in the Chesapeake Bay.*

The SF FMP was amended in 1998 to address overfishing of the summer flounder stock. A fourth strategy was identified:

- 4) *Overfishing Definition: The Bay jurisdictions will follow the guidelines recommended by the MAFMC/ASMFC that balance reductions in fishing mortality (F) with short-term economic burdens placed on the participants in the fishery. The Bay jurisdictions will equitably allocate the coastwide harvest of summer flounder to maintain the traditional recreational and commercial fisheries in the Chesapeake region.*

The ASMFC and MAFMC work jointly to develop an acceptable biological catch (ABC) and NMFS serves to implement and enforce fishing regulations for summer flounder. The coastwide annual catch limits (ACL) are allocated between the commercial and recreational fisheries based on historic landings: 60% to the commercial fishery and 40% to the recreational fishery.. The coastwide total allowable catch (TAC) is further allocated into state percentages. Maryland receives 2.04% and Virginia 21.3% of the coastwide commercial quota (Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 2014). Maryland uses a catch share management system to distribute the commercial summer flounder quota. The quota is partitioned among harvesters in Atlantic coastal waters including coastal bays and tributaries, Chesapeake Bay (primarily bycatch), and the Potomac River. Each harvester is assigned an individual fishing quota (IFQ); the waterman can then manage his harvest for best economic yield. Minimum size for commercial harvest is 14” except for hook-and-line which is 16”. Without an IFQ, commercial fishermen are restricted to 100 lbs per person per day in coastal waters and 50 lbs per person per day in tidal waters. The Potomac River Fisheries Commission (PRFC) and the Virginia Marine Resources Commission (VMRC) manage commercial harvest with a 14” minimum size for all gear. The commercial summer flounder season is open all year in each jurisdiction. Net design and mesh size are also regulated.

Trial seasons for a commercial hook and line minimum size of 14” have been established in Maryland. These seasons will be evaluated during 2014 and 2015. Season one is from May 1-15 and season two is from October 16-31. This fishery is restricted to coastal waters 1-3 miles from the shoreline to avoid spatial overlap and minimize conflict with the recreational fishery.

Decreasing the size limit for the hook and line fishery allows consistency within the commercial fishery

Recreational harvest is monitored by the National Marine Fisheries Service using the Marine Recreational Information Program (MRIP). States have the option to fund additional MRIP surveys, which Maryland supported from 2009-2011. A proposal has been made through ASMFC for individual states to take over administration of the recreational dockside surveys by 2016. This change will require additional staff to be hired. Dockside and telephone surveys, which occur in “waves”, are used to collect the recreational harvest data. There are six survey waves: January-February, March-April, May-June, July-August, September-October, and November-December; but preliminary estimates are not available until 45 days after the wave is completed. No data are collected during Wave 1 north of North Carolina due to a perception of low effort. The lack of real-time recreational harvest estimates and the variability of estimates makes management by the MAFMC difficult until wave 5 (September-October) estimates are available in mid-December. Recreational harvest is estimated after the season at which point the effectiveness of state management measures are evaluated. Prior to 2014, overages were deducted from the following year’s allocation. Besides the MRIP survey data, Maryland also maintains an electronic volunteer angler survey to collect biological data on the recreational fishery.

The current proportion of recreational landings allocated to each state annually is based on landings data from 1980-1989. Prior to 1999, summer flounder were managed under a single, coastwide set of regulations. Since 1999, states have been allowed to implement conservation equivalency, i.e., “actions taken by a state which differ from the specific requirements of the fishery management plan, but which achieve the same quantified level of conservation for the resource under management. For example, various combinations of size limits, gear restrictions, and season length can be demonstrated to achieve the same targeted level of fishing mortality” (Loftus & Kline, 2001). Each state can implement various regulatory combinations so long as it stays within their annual catch limit (ACL). Annually modified restrictions are anticipated to keep harvest within the target quota.

New for 2014 is the implementation of a regional conservation equivalency approach; Maryland’s region includes Virginia and Delaware. All states within a region have the same size limit, possession limit, and season (Atlantic States Marine Fisheries Commission, 2014a). For Maryland’s region, the minimum recreational size is 16” with a 4 fish/person/day limit. Regional management is not intended to alter established state recreational harvest allocations (Atlantic States Marine Fisheries Commission, 2014a).

The MAFMC and ASMFC have initiated a comprehensive review of the summer flounder components (amendments and frameworks) of the Summer Flounder, Scup, and Black Sea Bass FMP. Topics to be addressed include regional versus state conservation equivalency, potential for changes to state allocations, review of commercial versus recreational allocations, total allowable landings, methods to determine quota, spatial shifts in summer flounder abundance, and implementation of the management approach. The comprehensive review, and associated amendment, is scheduled for completion in 2017.

The FS PRT concludes that the SF FMP and Amendment #1 remain an appropriate framework for managing the summer flounder stock in Maryland. Since the Atlantic Coast management framework will be undergoing an extensive review over the next three years, the FS PRT recommends that the SF FMP and Amendment #1 be reviewed again when the MAFMC Amendment 21 is completed (tentatively scheduled for completion in 2017).

### **Fisheries Allocation Policy**

The Department of Natural Resources Fisheries Allocation Policy went into effect in September 2012. The policy provides guidelines for reviewing allocation, provides the basis/background for allocation, and outlines procedures for review and stakeholder input. The overarching factors in allocation decisions are linked to the FMP goals and objectives and include:

- Conservation;
- Management goal for the species;
- Social and cultural importance of maintaining fisheries and dependent industries;
- Environmental impact;
- Economic value of dependent fisheries;
- Economic viability of activity supported by the fisheries;
- Management resources;
- Historical trends and values; and
- Potential for new fisheries to develop.

Among the Allocation Policy procedures are triggers for allocation review. In accordance with policy, the pre-assessment of triggers for summer flounder was conducted internally by the FS PRT. There were no public requests for an allocation review of summer flounder. Triggers listed by the policy and the pre-assessment summary are as follows:

- Initial development or revision of a FMP

Pre-assessment: The Chesapeake Bay Summer Flounder Management Plan was developed in 1991, Amendment #1 was implemented in 1998, and there have been periodic reviews and updates of the plan. The total allowable catch is allocated between the commercial and recreational fisheries, 60% to 40%, respectively, based on landings from the Atlantic coast (1981-2006). The FS PRT concluded that the coastal management framework remains appropriate and that no changes are warranted at this time. The FS PRT recommends that the next SF FMP review occurs after the MAFMC and ASMFC complete their evaluation and review of the fishery management framework for the coastal summer flounder resource. The in-depth review is expected take at least three years with a tentative completion date of 2017.

- Significant shift in fisheries harvest

Pre-assessment: It is not uncommon for commercial harvesters from the lower mid-Atlantic to travel northward to catch summer flounder. For example, commercial harvesters from North Carolina will travel by boat to New Jersey. The commercial sector has requested permission to land summer flounder at a port located where they are fishing rather than traveling back to their home port. One potential consequence of such a change could be a reallocation of state quotas. For specific landings data, see the previous section Status of the Fishery. The MAFMC and

ASMFC will be conducting an extensive review of summer flounder management strategies including an evaluation of the need to respond to changing conditions in the summer flounder fisheries due to shifts in distribution and center of biomass. Since changes in distribution are a regional issue, the FS PRT recommends no action on Maryland allocation until the MAFMC and ASMFC complete their in-depth regional evaluation.

- Population shift of target or non-target species

Pre-assessment: As early as 2009, a poleward expansion of summer flounder distribution was evident (Nye et al., 2009). As part of the change in distribution, bottom and surface sea temperatures were analyzed. Both temperature data sets indicated warming ocean conditions along the northeast continental shelf of the United States. Nye et al. (2009) attributed the poleward expansion of summer flounder to changes in habitat condition; namely the unsuitable increase in water temperature. However, Bell et al. (2014) challenge the influence of warming ocean temperature as a major driver of summer flounder distribution. They suggest that an apparent northward shift of summer flounder biomass is a response to fishery regulations. Re-establishment of the proportion of larger summer flounder, which are found in cooler northern waters, has resulted in the northward shift of the species' center of biomass. Spatially, recreational angler effort has shifted as the center of biomass has shifted to offshore waters (~17 miles). The FS PRT recommends no action until the MAFMC and ASMFC complete their in-depth regional evaluation.

- Threatened and endangered species issues

At various times, summer flounder occupy the same estuarine and ocean habitats as Atlantic sturgeon. Atlantic sturgeon are currently listed as an endangered species (Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 2012). Encounter rates between the summer flounder fishery and sturgeon, including mortality, are considered to be minimal (Mid-Atlantic Fishery Management Council & National Marine Fisheries Service, 2013). While there is spatial overlap, it does not occur when sturgeon are spawning in freshwater riverine habitats (Greene, Zimmerman, Laney, & Thomas-Blate, 2009).

Winter flounder are suspected to compete with Atlantic sturgeon for prey (Greene et al., 2009). Therefore it is likely that summer flounder are competitors for prey with adult Atlantic sturgeon. Both species are opportunistic predators of demersal and infaunal organisms. Consequently, there is the potential for significant dietary overlap. As a demersal species, juvenile summer flounder are also a possible component of Atlantic sturgeon diet.

Shortnose sturgeon, which are endangered (Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 1998), are believed to compete for forage with Atlantic sturgeon when they occupy the same estuaries (Greene et al., 2009). It is therefore possible that summer flounder also compete for prey and are prey to shortnose sturgeon.

- Changing social patterns and values

Overall comparative effects of past, current, and future management modification on coastal communities has not been quantified. However, it is reasonable to expect that commercial

enterprises have experienced both positive and negative results. Continued implementation of sustainable management practices should benefit long-term stock sustainability, fishermen, associated businesses, and coastal communities as a whole (Mid-Atlantic Fishery Management Council & National Marine Fisheries Service, 2013).

The Marine Recreational Information Program (personal communication, National Marine Fisheries Service, Fisheries Statistics Division) was queried for data on the number of recreational angling trips where summer flounder was the primary species being sought. The premise being that changes in the number of directed angling trips reflects the recreational interest of a species. In general, there has been a decline of directed angling trips for summer flounder. No significant ( $p = 0.20$ ) trend is evident in Maryland (Figure 3). The time series of directed angler trips for summer flounder in Virginia is more complex (Figure 3). A significant reduction in anglers targeting summer flounder occurred during the decade from 1984 – 1993. The number of directed trips rapidly increased in the mid-1990s, but there has been a significant ( $p = 0.0066$ ) reduction of directed trips since that time.

- Ecosystem needs

Summer flounder segregate latitudinally along the continental shelf according to size: Larger fish are generally located further north in cooler waters (Nye et al., 2009). Water temperature along the U.S. Atlantic coast has been warming since 1970 (Nixon, Granger, Buckley, Lamont, & Rowell, 2004). This climate-induced warming trend has been implicated as a potential cause for poleward range expansion of larger adult summer flounder (Nye et al., 2009). Warming of coastal waters also has the potential to alter estuarine habitats (Nixon et al., 2004) which are important to young-of-year and juvenile summer flounder (Furey & Rooker, 2013).

The diet of summer flounder in the Chesapeake Bay was studied by Latour et al. (2008). Although summer flounder eat a variety of different prey types, mysid shrimp and bay anchovies were the main prey by weight. Mantis shrimp and weakfish were of secondary importance. Of lesser importance were spot, croaker, hake and sand shrimp. Dietary changes were noted by fish size, month and year. The importance of fish in summer flounder diets increased with increasing size. Smaller fish were more dependent on invertebrates especially mysid and sand shrimp. Mysid shrimp appear to be an important link between lower and upper trophic levels but very little is known about their population dynamics.

Summer flounder are subject to localized benthic habitat disruption from non-fishing activities (Mid-Atlantic Fishery Management Council & National Marine Fisheries Service, 2013). Habitat disruptions arise from projects that disturb the benthos and/or water quality such as marine mining, dredging, and construction (such as piling installation). The habitat impacts from these activities are believed to be localized and the negative effects on the summer flounder stock are anticipated to be minimal (Mid-Atlantic Fishery Management Council & National Marine Fisheries Service, 2013).

- Market dynamics

Dockside value is an indicator of market value for a fishery. Price per pound for summer flounder has been on the rise since 1958, when data records began (Table 3; personal communication, National Marine Fisheries Service, Fisheries Statistics Division). However,

prices declined slightly in Virginia from 1990 – 2003. Summer flounder dockside value data were not available for Maryland during the years 1995 – 2003.

- Management resources

DNR FS has a modest budget for management of summer flounder. Resources are allocated for the collection of samples from commercial trawlers and DNR FS beach seine and trawl surveys. Recreational harvest estimates are obtained through the MRIP; the cost of which is incurred by NMFS. A proposal is under consideration for the states to take over the administration of the MRIP by 2016.

- New data

A new benchmark stock assessment was completed in 2013, which incorporated data through 2012. The 2013 stock assessment (Northeast Fisheries Science Center, 2013) identified data that would be useful for improvement of future assessments. Of particular need is a better estimate of natural mortality (M) because it influences all metrics and is used to determine stock status. Metrics that are affected by estimates of M include SSB, F, and recruitment. Another notable data limitation is the lack of mean weight at age for fish greater than age 9.

DNR FS used a 2009 - 2011 volunteer angler survey to collect and improve length frequency estimates. Habitat data are being collected in Maryland's Coastal Bays to determine locations of habitat areas of particular concern.

## **Conclusion**

The FS PRT concluded that the current Chesapeake Bay Summer Flounder Fishery Management Plan, including Amendment #1, goal and strategies continue to be appropriate for state management of the summer flounder resource. The MAFMC began an extensive review of their management framework for summer flounder, scup, and black sea bass in 2014. The next Chesapeake Bay SF FMP review should be planned after the MAFMC and ASMFC have completed their review.

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Table 1. Commercial landings of summer flounder in Maryland from 1940 to 2014. Data for 2014 are preliminary (personal communication, National Marine Fisheries Service, Fisheries Statistics Division; personal communication, National Marine Fisheries Service, Fisheries Statistics Division, NERO).

Year	Pounds
1940	444,000
1941	183,000
1942	143,000
1943	143,000
1944	197,000
1945	460,000
1946	704,000
1947	532,000
1948	472,000
1949	783,000
1950	543,000
1951	327,000
1952	467,000
1953	1,176,000
1954	1,090,000
1955	1,108,000
1956	1,049,000
1957	1,171,000
1958	1,452,400
1959	1,333,800
1960	1,027,600
1961	539,000
1962	715,000
1963	550,400
1964	557,500

Year	Pounds
1965	733,900
1966	629,600
1967	439,200
1968	350,000
1969	203,300
1970	370,600
1971	296,400
1972	276,600
1973	495,000
1974	708,800
1975	892,700
1976	696,500
1977	739,100
1978	676,400
1979	1,712,300
1980	1,323,900
1981	403,200
1982	360,100
1983	936,500
1984	812,700
1985	577,406
1986	315,500
1987	318,900
1988	513,900
1989	204,100

Year	Pounds
1990	138,594
1991	233,678
1992	318,944
1993	274,127
1994	180,429
1995	175,263
1996	266,000
1997	215,000
1998	224,000
1999	201,000
2000	252,000
2001	223,000
2002	327,000
2003	329,343
2004	262,492
2005	337,652
2006	247,743
2007	228,809
2008	208,219
2009	213,564
2010	263,302
2011	259,392
2012	148,437
2013	165,134
2014	116,031

Table 2. Estimated recreational harvest of summer flounder in Maryland from 1981 to 2013. (personal communication, National Marine Fisheries Service, Fisheries Statistics Division)

Year	Number	PSE*	Weight (lbs)	PSE*
1981	184,896	33.0	267,199	34.5
1982	190,082	24.0	127,734	24.8
1983	830,680	9.6	872,522	9.5
1984	528,615	22.6	656,073	23.3
1985	94,991	21.0	95,328	22.8
1986	195,445	20.9	201,608	20.8
1987	613,598	17.0	730,293	18.8
1988	684,991	15.5	958,050	16.2
1989	199,371	12.7	309,321	13.2
1990	173,874	22.6	221,982	22.7
1991	282,623	13.8	357,631	14.0
1992	321,133	11.9	374,307	12.3
1993	241,659	17.3	335,843	17.8
1994	81,715	16.2	117,280	18.5
1995	139,697	16.7	224,443	20.6
1996	153,580	25.3	193,087	24.8
1997	64,226	25.6	87,225	24.9
1998	206,057	16.0	298,980	16.0
1999	226,912	11.7	445,274	12.1
2000	258,211	11.8	461,723	12.0
2001	139,392	16.8	319,010	17.1
2002	68,891	16.9	155,816	16.8
2003	41,201	20.0	121,385	20.9
2004	42,261	24.7	88,814	24.2
2005	117,021	39.6	303,459	45.1
2006	37,471	44.8	71,625	40.8
2007	103,849	37.6	206,522	33.2
2008	57,895	31.0	169,323	34.5
2009	64,647	25.4	168,025	25.5
2010	25,215	35.7	91,834	38.3
2011	15,347	44.5	55,686	46.7
2012	22,617	32.2	61,514	33.1
2013	51,140	22.9	104,277	22.6

\* The percent standard error, or PSE, is a measure of precision. Estimates should be viewed with increasing caution as PSEs increase beyond 25. Large PSEs – those above 50 – indicate high variability and low precision. Estimates with large PSEs should be viewed cautiously.

When comparing catch estimates across an extended time series, consider that differences in sampling coverage have occurred through the years. Some estimates may not be comparable over long time series.

Weight estimates are minimums and may not reflect the actual total weight landed or harvested. (MRIP 2014)

Table 3. Dockside price per pound for summer flounder landed in Maryland and Virginia (personal communication, National Marine Fisheries Service, Fisheries Statistics Division). Data have not been adjusted for inflation. Data from 1996 – 2002 not available from Maryland.

Year	\$/lb MD	\$/lb VA
1958	0.13	0.14
1959	0.13	0.16
1960	0.16	0.15
1961	0.17	0.17
1962	0.22	0.20
1963	0.22	0.20
1964	0.20	0.19
1965	0.20	0.18
1966	0.19	0.20
1967	0.25	0.23
1968	0.29	0.28
1969	0.34	0.32
1970	0.25	0.28
1971	0.34	0.29
1972	0.37	0.32
1973	0.31	0.27
1974	0.23	0.25
1975	0.30	0.28
1976	0.34	0.35
1977	0.49	0.44
1978	0.53	0.47
1979	0.47	0.43
1980	0.47	0.45
1981	0.65	0.54
1982	0.68	0.64
1983	0.60	0.57
1984	0.69	0.58
1985	0.98	0.87
1986	1.14	1.07
1987	1.09	1.13
1988	1.16	1.03
1989	1.76	1.39
1990	1.65	1.54
1991	1.30	1.21
1992	1.38	1.21
1993	1.71	1.29
1994	1.71	1.35
1995	1.84	1.43
1996		1.30
1997		1.30

Year	\$/lb MD	\$/lb VA
1998		1.27
1999		1.40
2000		1.42
2001		1.12
2002		1.06
2003	1.60	1.20
2004	1.69	1.38
2005	2.01	1.20
2006	2.22	1.59
2007	2.39	1.72
2008	2.78	1.64
2009	2.58	1.49
2010	2.07	1.62
2011	1.78	1.46
2012	2.36	1.87

## Figures

Figure 1. Commercial landings of summer flounder in Maryland and Virginia (personal communication, National Marine Fisheries Service, Fisheries Statistics Division; personal communication, National Marine Fisheries Service, Fisheries Statistics Division, NERO).

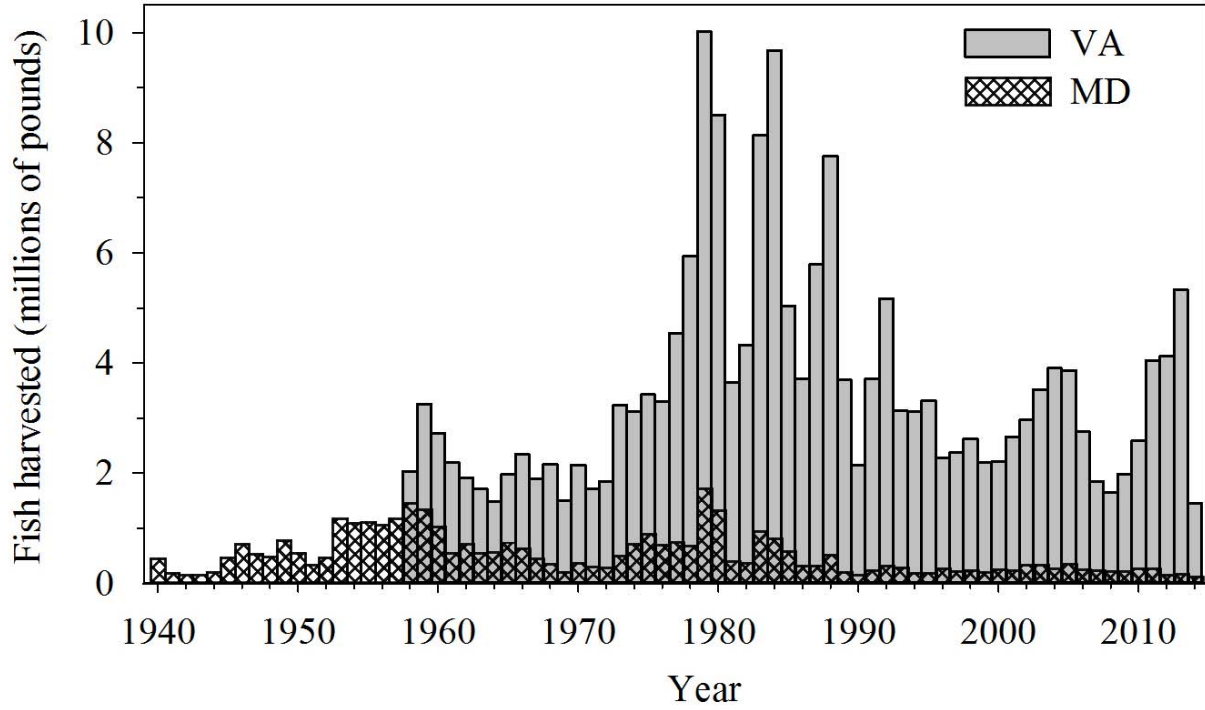


Figure 2. Recreational landings of summer flounder in Maryland and Virginia, (personal communication, National Marine Fisheries Service, Fisheries Statistics Division).

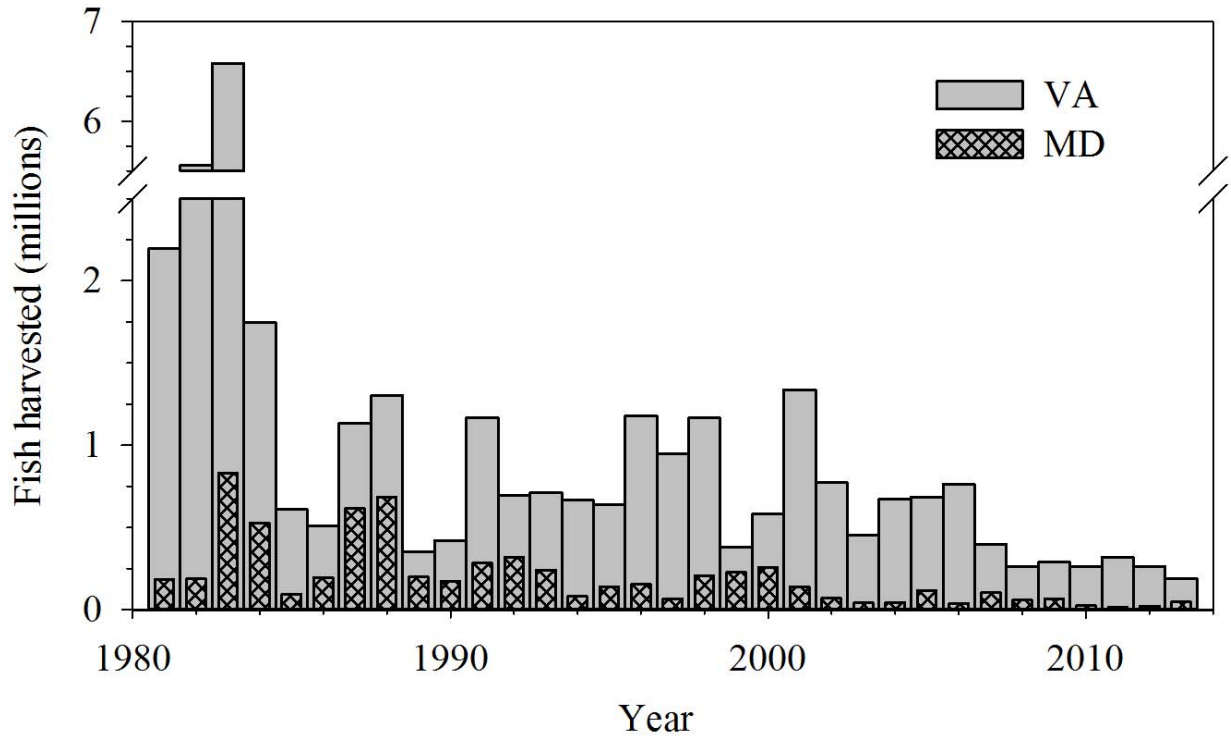
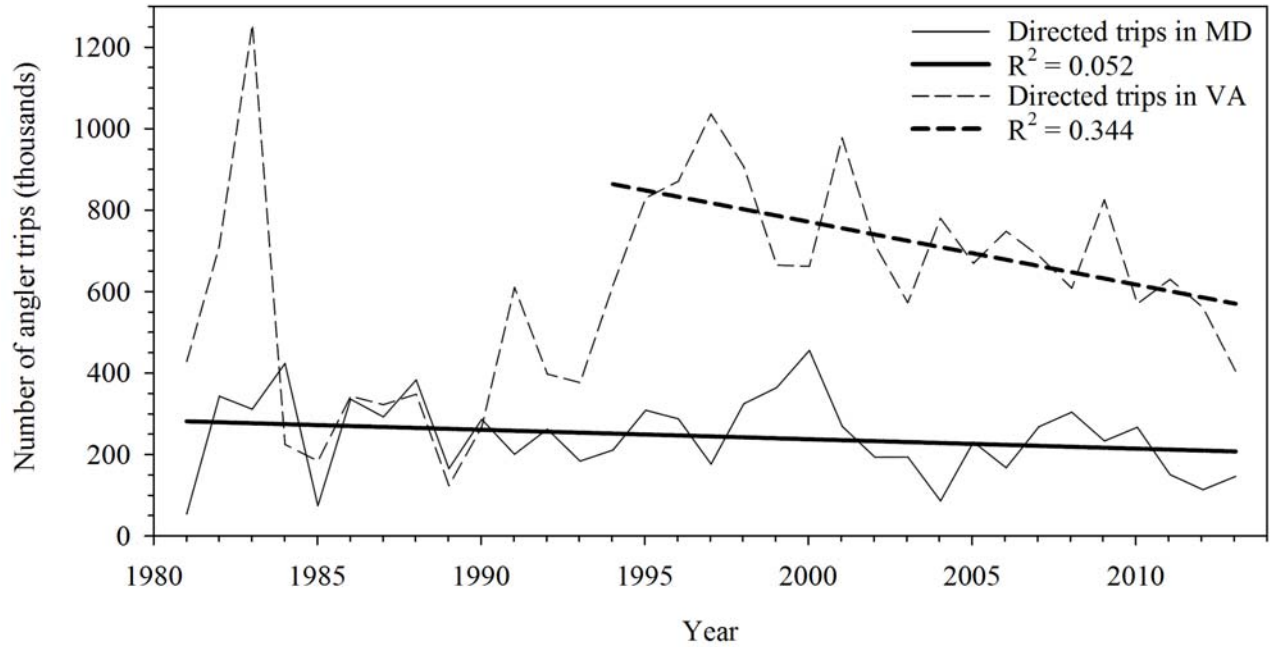


Figure 3. Number of recreational angling trips where summer flounder was the primary species being targeted (personal communication, National Marine Fisheries Service, Fisheries Statistics Division).



## Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Tables

<b>Amendment 1 to the 1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)</b>			
<b>Strategy</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
1.1) The Bay jurisdictions will continue to implement management measures which reduce fishing mortality on the summer flounder stock and equitably allocate the harvest of summer flounder.	1.1a) The jurisdictions will implement annual quotas, individual quotas and/or possession limits in addition to seasonal restrictions, minimum mesh size requirements, minimum size limits, limited entry and license requirements to meet the coastwide commercial quota. The traditional balance of harvest between the Chesapeake Bay and the Atlantic coast will be maintained.	1998, 2004 Continue	ASMFC revised overfishing definition. Coastwide and state quotas are determined annually. ASFMC allowed a change in allocation. FMP actions are annually evaluated and adjusted to meet ASMFC coastal stock rebuilding targets.
		2008 2009	The ASMFC's Summer Flounder, Scup, and Black Sea Bass Board set the 2009 total allowable landings for summer flounder at 18.45 million pounds, up 2.68 millions pounds from 2008. Officials determined from the 2008 June Stock Assessment Workshop (SAW) and Peer Review that summer flounder is no longer overfished, is not experiencing overfishing, but has not been rebuilt to target levels.
		2011	MD annual commercial quota is determined by NMFS/ASMFC. Commercial IFQ permits are issued. Limit without permit in Ocean and Coastal Bays is 100 lbs/individual/day. Limit without permit in Chesapeake Bay is 50 lbs/individual/day.  PRFC annual commercial quota is determined by NMFS/ASMFC and deducted from MD's total annual quota.  VA annual commercial quota is determined by NMFS/ASMFC and is 21.3% of the coastwide quota. Of the annual quota, 300,000 lbs is set aside for tidal waters; 142,114 lbs is set aside for the Chesapeake Bay waters and the remaining quota is allocated to harvest from non-Virginia waters (typically beyond 3 miles offshore). For the non-VA waters, harvest from



**Amendment 1 to the 1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)**

Strategy	Action	Date	Comments
		2013	<p>1st Monday in January to the day prior to last Monday in November is allotted 70.7% of this quota. The remaining 29.3% of the quota is allotted to the last Monday of November to December 31. Allocation limits are adjusted for over and under harvest. A series of combined pound/day and pound/species (Atlantic croaker, black sea bass, scup, squid, scallop, and Atlantic mackerel) restrictions have been implemented.</p> <p>MD's commercial hook and line minimum size was reduced to 16". Minimum size for other gear types is 14". PRFC and VA minimum size is 14".</p>
	1.1b) The jurisdictions will implement recreational seasons, creel limits and minimum size limits to meet the annual coastal recreational harvest limits recommended by the MAFMC/ASMFC.	2001	ASMFC implements coastwide system for conservation equivalency.
		2003	ASMFC sets State-specific recreational harvest targets.
		2005	ASMFC established a program to allow the recreational summer flounder coastwide allocations to be subdivided into regions.
	2014	<p><b>Regional management was implemented in place of conservation equivalency. MD, DE, and VA are being managed as a single region with all jurisdictions having the same regulations. Jurisdictions have the same regulations: 16" minimum length and 4 fish/person/day creel.</b></p>	
	1.1c) Maryland and Virginia will maintain the traditional commercial fishery by requiring a special landings permit for the Atlantic commercial summer flounder fishery. The jurisdictions will develop, define and adopt criteria to determine eligibility for participation in the	1998 2003 Continue	MD has implemented a summer flounder catch share system. The catch share allocation equitably distributes the quota among harvesters based on past harvest. IFQ allows fishermen to manage harvest for best economic yield.

<b>Amendment 1 to the 1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)</b>			
<b>Strategy</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
	fishery.	2005 On-going	VA issues permits for vessels and dealers.

<b>1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)</b>				
<b>Strategy</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>	
1.1) Maryland, Virginia and the PRFC will propose changes in the minimum size regulations, creel limits and seasons in the recreational fishery to conform to guidelines set by MAFMC. Maryland and Virginia will comply with commercial quotas, mesh sizes and other commercial restrictions enacted by MAFMC. These recommendations are intended to provide greater spawning stock biomass from each flounder year-class and provide a greater yield-per-recruit.	1.1a) Maryland, the PRFC and Virginia will propose an increase in their minimum size limit for recreationally caught flounder from 13 inches to 14 inches.	1992	Initiated increasing minimum size 13” to 14” ASMFC revised overfishing definition.	
	1.1b) Maryland, Virginia and the PRFC will propose creel limits and seasonal restrictions in compliance with MAFMC recommendations. A six fish creel limit will be proposed as one measure to meet these recommendations. A recreational fishing season extending from May 15 – Sept. 30 may also be required to reduce fishing mortality. Virginia will continue to enforce its ten fish per day limit until such time as MAFMC recommendations can be implemented.		1998	See Amendment #1, Strategy 1.1, Action 1.1b
			1998	See Amendment #1, Strategy 1.1, Action 1.1b
	1.1c) Commercial size limits will remain at 13” for Virginia and Maryland in conformance with MAFMC recommendations. The PRFC will propose a 14” minimum commercial size limit for its commercial flounder fisheries to provide parity with the recreational fishery. A 5.5 inch diamond or 6 inch square minimum cod end mesh size will be implemented in all directed flounder trawl fisheries.		1998	See Amendment #1, Strategy 1.1, Action 1.1a
	1.1d) Commercial fisheries will be subject to quotas set by MAFMC and administered by the states. All flounder landed by a vessel registered in a state will be counted towards that state’s quota, without regard to the actual fishing location. Commercial fisheries in each state will be closed when that state’s quota is reached. The PRFC will		1993	ASMFC State allocations changed.
		1995	ASMFC capped coastwide quota & adjusted stock rebuilding schedule.	
		1998	ASMFC revised overfishing definition. See Amendment #1, Strategy 1.1, Action 1.1a	

<b>1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)</b>			
<b>Strategy</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
	propose a moratorium on its commercial flounder fisheries from January through June, inclusive, to compliment the seasonal closure proposed for the recreational fishery, in addition to conforming to MAFMC quota closures.	2012  2013  2014	MD receives 2.04% of the coastwide commercial TAL. A portion of MD's TAL is allocated to PRFC. VA is allocated 21.3% of the coastwide quota.  <b>A coastwide benchmark stock assessment was completed in 2013 (with data through 2012). New (updated) BRPs were adopted. The coastal summer flounder stock is not overfished and overfishing is not occurring.</b>  <b>The MAFMC and ASMFC have begun a major review of the summer flounder component of their management framework for summer. Completion is scheduled for 2017.</b>
1.2) Management agencies will continue to promote the implementation of minimum mesh size in the directed flounder trawl fisheries sufficient to allow escapement of immature female flounder. Management agencies will urge the Mid-Atlantic Fisheries Management Council to enact a mesh size compatible with these management goals in the directed flounder trawl fisheries to complement the mesh size requirements enacted through the Baywide Plan.	1.2a) Virginia and Maryland will implement a 5.5 inch diamond or 6 inch square minimum cod end mesh size in all directed flounder trawl fisheries to allow escapement of immature female flounder. Virginia and the PRFC will continue their bans on trawling in state waters.	On-going	Mesh size restrictions have been implemented.
	1.2b) Virginia and Maryland will work with the Mid-Atlantic Fisheries Management Council to adopt a 5.5 inch diamond or 6 inch square minimum cod end mesh size for the EEZ flounder trawl fishery consistent with the objectives of the Baywide Plan and MAFMC's recommendations for conservation of the resource.	On-going  2014	Mesh size restrictions have been implemented.  <b>MAFMC and ASMFC have begun a major review of their management framework for summer flounder. Completion is scheduled for 2017.</b>
1.3) Virginia, Maryland and the Potomac River Fisheries Commission will investigate the incidental bycatch of small flounder in non-directed fisheries and participate in coastal deliberations to protect small flounder in other coastal states.	1.3a) Maryland will collect information from its pound net and ocean trawl fisheries to develop management strategies for reducing the non-directed bycatch of small flounder and other species. Options for consideration include minimum mesh sizes, season and area restrictions, culling practices, escape panels and fishing	On-going	MD collects summer flounder abundance, size, and age data from commercial trawlers fishing near-shore Atlantic waters.



**1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)**

Strategy	Action	Date	Comments
	licensees. Maryland and Virginia will continue to supplement the Marine Recreational Fisheries Statistics Survey to obtain more detailed catch statistics at the state level. Through FISHMAP, Maryland will begin a pound net sampling project to collect information on summer flounder and other species.		
2.4) Maryland and Virginia will continue their joint and individual efforts in providing the information needed to determine the relationship between abundances of adult and juvenile flounder.	2.4) Maryland and Virginia will continue the Baywide trawl survey of estuarine finfish species and crabs to measure size, age, sex distribution, abundance and CPUE. Maryland will continue seaside juvenile summer flounder studies utilizing bottom trawls, beach seines and their cooperative sampling of trawl fisheries.	<p>1977 On-going</p> <p>1989 On-going</p> <p>2001 – 2006</p> <p>2002 - 2006</p>	<p>MD DNR conducts a summer blue crab trawl survey.</p> <p>VIMS and MD DNR collaboratively conduct a winter dredge survey of blue crabs.</p> <p>University of Maryland Center for Environmental Science Chesapeake Biological Laboratory, University of Maryland - College Park, and the Maryland Department of Natural Resources co-operatively conduct the Chesapeake Bay Fishery-Independent Multispecies Survey (ChesFIMS). More information is available at: <a href="http://hjort.cbl.umces.edu/chesfims.html">http://hjort.cbl.umces.edu/chesfims.html</a></p> <p>VIMS conducts the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP, a subset of ChesFIMS sites) with funding from the VMRC. The trawl survey samples juvenile and adult fishes from the upper Chesapeake Bay to the mouth of the Bay. Northeast Area Monitoring and Assessment Program (NEAMAP) is a near shore trawl survey that samples from Cape Hatteras north to Cape Cod that also implemented. More information is available at: <a href="http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/interaction/fish_food_habits/index.php">http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/interaction/fish_food_habits/index.php</a></p>

**1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)**

Strategy	Action	Date	Comments
		On-going	Summer flounder juvenile surveys are required by ASMFC.
<p>3.1) The District of Columbia, Environmental Protection Agency, Maryland, Pennsylvania, the Potomac River Fisheries Commission, and Virginia will continue to promote the commitments of the 1987 Chesapeake Bay Agreement. The achievement of the Bay commitments will lead to improved water quality and enhanced biological production.</p>	<p>3.1) The District of Columbia, Environmental Protection Agency, Maryland, Pennsylvania, the Potomac River Fisheries Commission, and Virginia will continue to set specific objectives for water quality goals and review management programs established under the 1987 Chesapeake Bay Agreement. The Agreement and documents developed pursuant to the Agreement call for:</p> <p>1) Developing habitat requirements and water quality goals for various finfish species.</p>	<p>1990 On-going</p>	<p>Chesapeake Bay Program (CBP) develops, revises, and monitors goals and strategies for agriculture, air pollution, bay grasses, blue crabs, chemical contaminants, climate change, development, education, forests, groundwater, invasive species, menhaden, nutrients, oysters, population growth, rivers and streams, sediment, shad, stormwater runoff, striped bass, wastewater, weather, and wetlands. For more information: <a href="http://www.chesapeakebay.net/issues">http://www.chesapeakebay.net/issues</a></p> <p>Chesapeake Bay Program develops, revises, and monitors goals and strategies for living resources (blue crab, menhaden, oyster, shad, and striped bass). For more information: <a href="http://www.chesapeakebay.net/issues/issue/blue_crabs">http://www.chesapeakebay.net/issues/issue/blue_crabs</a> <a href="http://www.chesapeakebay.net/issues/issue/menhaden">http://www.chesapeakebay.net/issues/issue/menhaden</a> <a href="http://www.chesapeakebay.net/issues/issue/oysters">http://www.chesapeakebay.net/issues/issue/oysters</a> <a href="http://www.chesapeakebay.net/issues/issue/shad">http://www.chesapeakebay.net/issues/issue/shad</a> <a href="http://www.chesapeakebay.net/issues/issue/striped_bass">http://www.chesapeakebay.net/issues/issue/striped_bass</a></p> <p>The CBP has developed a new draft Watershed Agreement with fisheries and habitat outcomes. Summer flounder is not a focal species.</p>
	<p>3.1 2) Developing and adopting basinwide nutrient reduction strategies.</p>	<p>1990 On-going</p>	<p>Chesapeake Bay Program develops, revises, and monitors goals and strategies for nutrient reduction. For more information: <a href="http://www.chesapeakebay.net/issues/issue/nutrients">http://www.chesapeakebay.net/issues/issue/nutrients</a></p>
	<p>3.1 3) Developing and adopting basinwide plans for the reduction and control of toxic substances.</p>	<p>1990 On-going</p>	<p>Chesapeake Bay Program develops, revises, and monitors goals and strategies for chemical</p>

1991 Chesapeake Bay Summer Flounder Fishery Management Plan Implementation Table (updated 6/2014)			
Strategy	Action	Date	Comments
			contaminants. For more information: <a href="http://www.chesapeakebay.net/issues/issue/chemical_contaminants">http://www.chesapeakebay.net/issues/issue/chemical_contaminants</a>
	3.1 4) Developing and adopting basinwide management measures for conventional pollutants entering the Bay from point and nonpoint sources.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for sediment, wastewater, stormwater runoff, and agriculture. For more information: <a href="http://www.chesapeakebay.net/issues/issue/sediment">http://www.chesapeakebay.net/issues/issue/sediment</a> <a href="http://www.chesapeakebay.net/issues/issue/wastewater">http://www.chesapeakebay.net/issues/issue/wastewater</a> <a href="http://www.chesapeakebay.net/issues/issue/stormwater_runoff">http://www.chesapeakebay.net/issues/issue/stormwater_runoff</a>
	3.1 5) Quantifying the impacts and identifying the sources of atmospheric inputs on the Bay system.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for air pollution. For more information: <a href="http://www.chesapeakebay.net/issues/issue/air_pollution">http://www.chesapeakebay.net/issues/issue/air_pollution</a>
	3.1 6) Developing management strategies to protect and restore wetlands and submerged aquatic vegetation.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for wetland and submerged aquatic vegetation restoration. For more information: <a href="http://www.chesapeakebay.net/issues/issue/wetlands">http://www.chesapeakebay.net/issues/issue/wetlands</a> <a href="http://www.chesapeakebay.net/issues/issue/bay_grasses">http://www.chesapeakebay.net/issues/issue/bay_grasses</a>
	3.1 7) Managing population growth to minimize adverse impacts to the Bay.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for land development. For more information: <a href="http://www.chesapeakebay.net/issues/issue/development">http://www.chesapeakebay.net/issues/issue/development</a>

### Acronyms

ASMFC – Atlantic States Marine Fisheries Commission  
 CBP – Chesapeake Bay Program  
 ChesFIMS – Chesapeake Bay Fishery-Independent Multispecies Survey

ChesMMAP – Chesapeake Bay Multispecies Monitoring and Assessment Program  
 CPUE – Catch per Unit Effort  
 EEZ – Exclusive Economic Zone  
 FISHMAP – Fishery Independent Sampling and Habitat Mapping  
 FMP – Fishery Management Plan

IFQ – Individual Fishing Quota  
MAFMC – Mid-Atlantic Fishery Management Council  
MD DNR – Maryland Department of Natural Resources  
NEAMAP –  
NMFS – National Marine Fisheries Service  
PRFC – Potomac River Fisheries Commission  
SAW – Stock Assessment Workshop  
TAL – Total Allowable Landings  
VAC – Code of Virginia  
VIMS – Virginia Institute of Marine Science  
VMRC – Virginia Marine Resource Commission



## Appendix 1

Fishery management plans (FMPs) provide a framework for how a fishery resource will be managed based on a species life history, habitat, and fishery utilization over time. Maryland law (Natural Resources Article §4-215) contains a statutory mandate for the development of FMPs for a given list of species. Legislation enacted in 2010 expanded MD Department of Natural Resources' (MDNR) authority to prepare FMPs for additional fish species. MDNR no longer needs to go to the General Assembly to justify adding new species to the list. FMPs can be prepared for species based on specific concerns about the status of a species and after consultation with the Tidal Fisheries Advisory Commission (TFAC) and the Sport Fisheries Advisory Commission (SFAC).

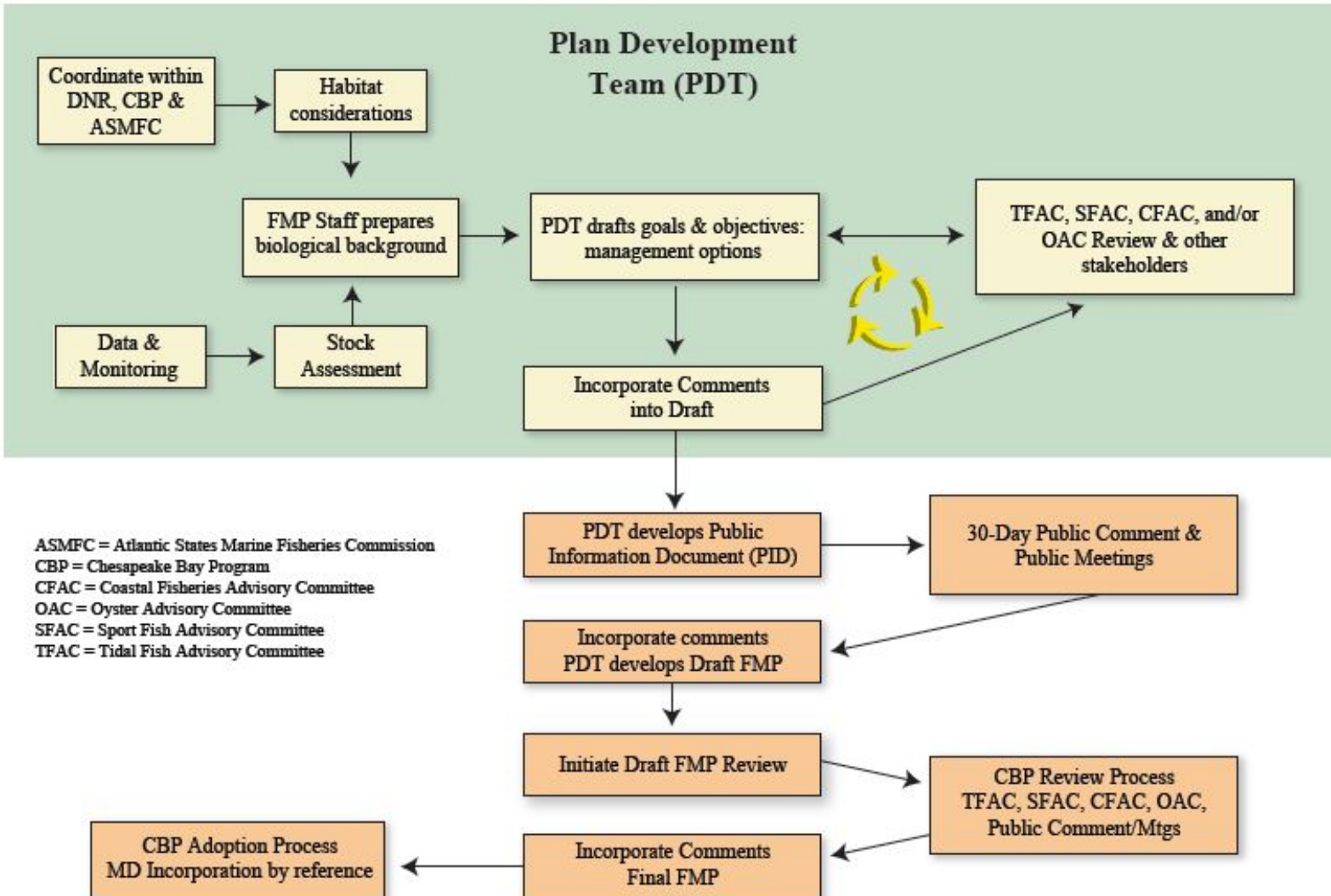
A Maryland Task Force on Fishery Management (Task Force) was convened in 2008 to review the current fishery management planning process and recommend improvements to the process that would increase stakeholder input and transparency during all stages of the FMP development and review process (Appendices 4 and 5 for flowcharts of the FMP Development Process and the FMP Review Process). The FMP staff developed a time line to review FMPs for 26 species. It is used to delineate an annual work plan.

FMP review begins with the designation of a Plan Review Team (PRT) by the Fisheries Service (FS) Director. The FS PRT evaluates the FMP goal, objectives, management strategies, and actions for their implementation status and applicability to current management needs. Depending on the particular species, the FMP review could also include the Chesapeake Bay Program and/or coordination with the Atlantic States Marine Fisheries Commission (ASMFC). After reviewing the components of the FMP and providing comments on the status of the management actions, the FS PRT recommends one of three pathways: 1) continue implementing the plan; 2) develop an amendment to significantly change or add to the FMP; or 3) revision of the FMP. The FS PRT drafts a FMP review report for review by the Fisheries Service Senior Management Team. The draft is also sent to the TFAC and SFAC for their review and input. The final, revised FMP review report is submitted to the Fisheries Service Director who makes the final decision regarding which of the three options to pursue: status quo, amendment, or revision.

In 2008, the Task Force emphasized the need for ecosystem-based management for all state managed fish species, including ASMFC managed species such as striped bass. The Task Force recommended MDNR continue research on the influence of habitat on fish populations, factors that impair fish habitat, participation in the environmental review process, updating regulations, transparent management framework, and outreach to County, local, and public entities. Chesapeake Bay jurisdictions are developing quantitative ecosystem-based management tools that will supplement traditional management tools currently in use. Ecosystem-based tools will address habitat, food web, stock assessment, and socioeconomic issues.

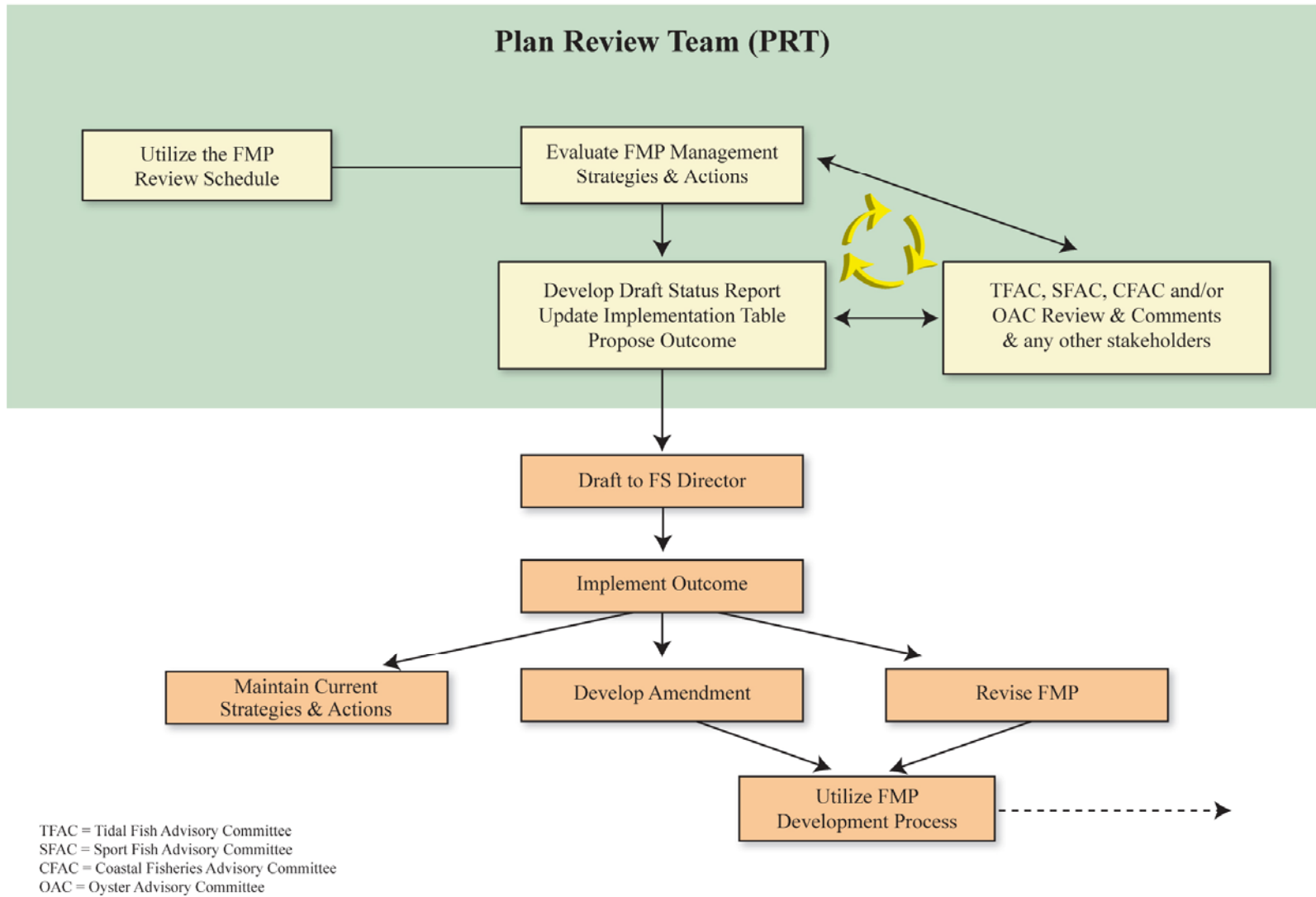
Appendix 2. Schematic of the fishery management plan development process in Maryland.

## Fishery Management Plan (FMP) Development Process



Appendix 3. Schematic of the fishery management plan review process in Maryland.

## Fishery Management Plan (FMP) Review Process



Appendix 4. Summary of the history of the Summer Flounder, Scup, and Black Sea Bass FMP (Mid-Atlantic Fishery Management Council <http://www.mafmc.org/fisheries/fmp/sf-s-bsb>; Northeast Fisheries Science Center, 2013).

<b>Year</b>	<b>Document</b>	<b>Plan Species</b>	<b>Management Action</b>
1988	Original FMP	summer flounder	- Established management plan for summer flounder
1991	Amendment 1	summer flounder	- Established an overfishing definition for summer flounder
1993	Amendment 2	summer flounder	- Established rebuilding schedule, commercial quotas, recreational harvest limits, size limits, gear restrictions, permits, and reporting requirements for summer flounder  - Created the Summer Flounder Monitoring Committee
1993	Amendment 3	summer flounder	- Revised the exempted fishery line  - Increased the large mesh net threshold  - Established otter trawl retention requirements
1993	Amendment 4	summer flounder	- Revised state-specific shares for summer flounder quota allocation
1993	Amendment 5	summer flounder	- Allowed states to combine or transfer commercial summer flounder quota
1994	Amendment 6	summer flounder	- Set criteria for allowance of multiple nets on board commercial vessels for summer flounder  - Established deadline for publishing catch limits, commercial mgmt. measures for summer flounder
1995	Amendment 7	summer flounder	- Revised the F reduction schedule for summer flounder
1996	Amendment 8	summer flounder and scup	- Incorporated Scup FMP into Summer Flounder FMP and established scup measures including commercial quotas, recreational harvest limits, size limits, gear restrictions, permits, and reporting requirements

<b>Year</b>	<b>Document</b>	<b>Plan Species</b>	<b>Management Action</b>
1996	Amendment 9	summer flounder and black sea bass	- Incorporated Black Sea Bass FMP into Summer Flounder FMP and established black sea bass measures including commercial quotas, recreational harvest limits, size limits, gear restrictions, permits, and reporting requirements
1997	Amendment 10	summer flounder, scup, and black sea bass	- Modified commercial minimum mesh requirements, continued commercial vessel moratorium, prohibited transfer of fish at sea, and established special permit for party/charter sector for summer flounder
1998	Amendment 11	summer flounder, scup, and black sea bass	- Modified certain provisions related to vessel replacement and upgrading, permit history transfer, splitting, and permit renewal regulations
1999	Amendment 12	summer flounder, scup, and black sea bass	- Revised FMP to comply with the SFA and established framework adjustment process
2001	Framework 1	summer flounder, scup, and black sea bass	-Established quota set-aside for research for all three species
2001	Framework 2	summer flounder	- Established state-specific conservation equivalency measures for summer flounder
2003	Amendment 13	summer flounder, scup, and black sea bass	- Addressed disapproved sections of Amendment 12 and included new EIS
2003	Framework 3	scup	- Allowed the rollover of winter scup quota - Revised start date for summer quota period for scup fishery
2003	Framework 4	scup	- Established system to transfer scup at sea
2004	Framework 5	summer flounder, scup, and black sea bass	- Established multi-year specification setting of quota for all three species
2006	Framework 6	summer flounder	- Established region-specific conservation equivalency measures for summer flounder

<b>Year</b>	<b>Document</b>	<b>Plan Species</b>	<b>Management Action</b>
2007	Amendment 14	scup	- Established rebuilding schedule for scup
2007	Framework 7	summer flounder, scup, and black sea bass	- Built flexibility into process to define and update status determination criteria - Scup GRAs modifiable by framework adjustment
2007	Amendment 16	summer flounder, scup, and black sea bass	- Standardized bycatch reporting methodology
2011	Amendment 15	summer flounder, scup, and black sea bass	- Established annual catch limits (ACLs) and accountability measures (AMs)
2014	Amendment 19	summer flounder, scup, and black sea bass	- Modified the accountability measures for the Council's recreational fisheries