United States Government Accountability Office

Report to Congressional Committees

March 2020

MIXED-USE FISHERIES

South Atlantic and Gulf of Mexico Councils Would Benefit from Documented Processes for Allocation Reviews

GAO-20-216

GAO Highlights

Highlights of GAO-20-216, a report to congressional committees

March 2020

MIXED-USE FISHERIES

South Atlantic and Gulf of Mexico Councils Would Benefit from Documented Processes for Allocation Reviews

Why GAO Did This Study

Commercial and recreational marine fisheries—including those in the South Atlantic and Gulf of Mexico—are critical to the nation's economy, contributing approximately $99.5 billion to the U.S. gross domestic product in 2016, according to the Department of Commerce. NMFS and the councils may allocate fishing privileges for mixed-use fisheries in federal waters, but establishing and revising such allocations can be complex, in part because of concerns about equity.

The Modernizing Recreational Fisheries Management Act of 2018 includes a provision for GAO to review mixed-use fisheries allocations in the South Atlantic and Gulf of Mexico. For these regions, this report examines (1) the extent to which the councils established or revised mixed-use fisheries allocations, (2) key sources of information that may be available for reviewing allocations, and (3) the extent to which the councils have developed processes to help guide such reviews. GAO reviewed NMFS and council policies and other council documents; analyzed information on allocations established and revised; compared council processes to agency guidance and internal control standards; and interviewed NMFS officials, council members and staff, and 46 stakeholders that reflected various interests. Views from these stakeholders are not generalizable.

What GAO Recommends

GAO is making two recommendations, including that NMFS work with the councils to develop documented processes for conducting allocation reviews. The agency agreed with GAO's recommendations.

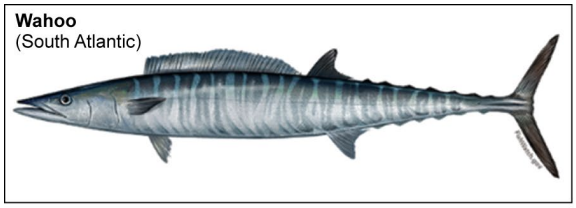
View GAO-20-216. For more information, contact Anne-Marie Fennell at (202) 512-3841 or fennella@gao.gov.

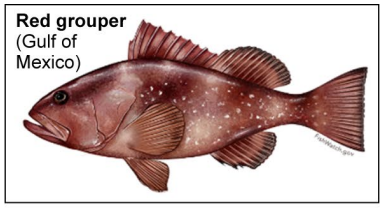
What GAO Found

The South Atlantic and Gulf of Mexico regional fishery management councils, with approval from Department of Commerce's National Marine Fisheries Service (NMFS), established and revised allocations to varying degrees for mixed-use fish stocks—fisheries with a combination of commercial and recreational fishing. Regional councils were created by statute to help manage fisheries in federal waters, including allocating—or distributing—fishing privileges, when warranted. Starting in 1985, the South Atlantic council established allocations, generally a percentage of allowable harvest, for 50 of its 51 mixed-use fish stocks and revised most of those at least once. The Gulf of Mexico council established allocations for nine of its 23 mixed-use fish stocks, revising three of those once. Historically, allocations have been largely based on estimates of the commercial and recreational fishing sectors' past use of the resource, according to NMFS.

Key sources of information that may be available to help NMFS and the councils review allocations include trends in catch and landings (the amount of fish caught or brought to shore); fish stock assessments; and economic analyses. Each source presents some challenges in supporting allocation decisions, however. For example, NMFS works with states to estimate recreational catch, which provides information about demand, but faces difficulties generating reliable estimates. This is in part because of attributes of the recreational fishing sector, including the greater number of recreational anglers compared with commercial fishing participants. NMFS issued guidance in 2019 to promote consistency in estimating recreational catch data to help improve the quality of the information.

Examples of Fish Stocks with Allocation Reviews Underway as of December 2019





Source: National Marine Fisheries Service (images). | GAO-20-216

The South Atlantic and Gulf of Mexico councils developed processes for when to initiate fish stock allocation reviews, but not for how to conduct those reviews. A 2012 report for NMFS found that reviews had been done inconsistently, and stakeholders were dissatisfied with allocation decision-making. In response, NMFS developed guidance calling for structured and transparent allocation review processes. Both councils established criteria for initiating reviews, such as time-based triggers, and as of December 2019 they had several reviews underway (see figure). In April 2019, the Gulf of Mexico council began convening a workgroup to propose a draft allocation review process, but has not indicated what actions it will take, if any, in response to a proposal. The South Atlantic council postponed any discussions until March 2020. As of December 2019, neither council had a documented process. Documented processes for conducting allocation reviews would provide NMFS with better assurance that the councils carry out upcoming reviews in a structured and transparent manner.

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Abbreviations

Councils	Regional Fishery Management Councils
Magnuson-Stevens Act	Fishery Conservation and Management Act of 1976, as amended
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

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U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

March 31, 2020

The Honorable Roger Wicker
Chairman
The Honorable Maria Cantwell
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Raúl M. Grijalva
Chairman
The Honorable Rob Bishop
Ranking Member
Committee on Natural Resources
House of Representatives

Commercial and recreational marine fisheries are critical to the nation's economy, contributing approximately $99.5 billion to the U.S. gross domestic product and supporting approximately 1.7 million jobs in 2016, according to the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA).[1] The South Atlantic and Gulf of Mexico regions are each home to multiple fisheries with a combination of commercial and recreational fishing,[2] known as mixed-use fisheries.[3] Commercial fishing in these regions landed nearly 2 billion pounds of

[1]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Fisheries Economics of the United States, 2016*, Technical Memorandum NMFS-F/SPO-187a (Silver Spring, MD: December 2018). Information on gross domestic product and jobs includes data on commercial seafood harvesters, processors, dealers, wholesalers, distributors, importers, and retailers, as well as recreational fishing trips and fishing equipment. Data for 2016 were the most recent available at the time of our review.

[2]The recreational fishing sector comprises anglers accessing fisheries from private boats and for-hire sector business entities, which include charter boats and head boats. A charter boat is usually hired by a group of anglers for a period of time. Head boats are typically large capacity multi-passenger vessels that charge a per angler fee for a fishing trip.

[3]A fishery refers to one or more fish stocks that can be treated as a unit for conservation and management purposes and that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics. A fish stock refers to a species, subspecies, geographical grouping, or other category of fish capable of management as a unit. A fish stock may be one species or a complex of comparable species.

seafood in 2016, valued at more than $1 billion dollars.[4] These regions also have the greatest recreational fishing activity in federal waters, according to NOAA, which estimates that recreational anglers in these regions made more than 127 million fishing trips in 2016.[5]

The lead federal agency responsible for managing commercial and recreational marine fisheries is NOAA's National Marine Fisheries Service (NMFS). Under the Fishery Conservation and Management Act of 1976, often referred to as the Magnuson-Stevens Act, as amended,[6] NMFS and eight regional fishery management councils (councils) created by the act are responsible for fisheries management and conservation in federal waters.[7] In particular, NMFS and the councils, including the South Atlantic and Gulf of Mexico councils, are responsible for allocating—or distributing—privileges for catching fish between the commercial and recreational fishing sectors in these two regions when such allocations may be warranted.[8] Allocations are generally a percentage of the fisheries' allowable harvest. Historically, mixed-use fisheries allocations have been predominantly based on estimates of each fishing sector's past use of the resource, according to NOAA.[9]

[4]National Marine Fisheries Service, *Fisheries Economics, 2016*.

[5]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Fisheries of the United States, 2017*, NOAA Current Fishery Statistics No. 2017 (Silver Spring, MD: September 2018). Federal waters of the United States are generally located 3 to 200 nautical miles offshore. However, federal waters in some areas and for the management of some fish begin at 9 nautical miles.

[6]The Fishery Conservation and Management Act of 1976, as amended, among other things, sets forth national standards for federal fisheries conservation and management. Pub. L. No. 94-265, § 301(a), 90 Stat. 331, 346 (1976) (codified as amended at 16 U.S.C. § 1851(a)).

[7]The councils are supported by federal funds and generally comprise NMFS regional administrators, the principal state official with responsibility for marine fishery management in each state within the council's region, and members of the fishing industry and conservation groups appointed by the Secretary of Commerce as voting members. The councils also include nonvoting members, such as officials from other federal agencies.

[8]NMFS defines an allocation of fishing privileges as a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. 50 C.F.R. § 600.325(c)(1).

[9]Morrison, W.E., and T.L. Scott, *Review of Laws, Guidance, Technical Memorandums and Case Studies Related to Fisheries Allocation Decisions,* U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-148 (Silver Spring, MD: 2014).

Allocations between the commercial and recreational fishing sectors can be complex and difficult, in part due to perceptions of fairness that arise in making allocation decisions. Allocation decisions establish the proportional access each sector has to a fishery, which in turn may result in economic and social impacts for participants in the sectors. There may be differences in the economic and social values that participants in each fishing sector place on fishery resources, leading to divergent views on what the allocations should be.

Differences in the management of the commercial and recreational fishing sectors have also led to questions about the equity of allocations. For instance, participants from the commercial fishing sector have raised concerns that fishery management disparities between the two sectors could result in unfair allocations. Specifically, commercial participation in fisheries is generally limited through federal permits, but recreational anglers do not have similar limits, according to commercial sector participants. They also noted that the recreational sector has at times exceeded its allocations for certain fisheries, and that the two sectors are not always held accountable for adhering to their allocations in the same way. In contrast, recreational participants have expressed concerns that recreational interests have been historically underrepresented in allocations. These participants indicated that as coastal populations have increased and fishing technologies such as navigational systems have improved, recreational fishing has become more popular, generating significant economic activity in related sales and jobs, including in the South Atlantic and Gulf of Mexico. They indicated that some allocations may be outdated and called for NMFS and the councils to review those allocations.

In 2016, NMFS issued a policy and guidance to the councils on establishing and reviewing fisheries allocations, which are intended to help the councils and NMFS review and update allocations under the Magnuson-Stevens Act.[10] In particular, the NMFS guidance calls for the councils to identify criteria for triggering allocation reviews and outlines

[10]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Fisheries Allocation Review Policy*, NMFS Policy 01-119 (effective July 27, 2016 and renewed September 27, 2018); *Criteria for Initiating Fisheries Allocation Reviews Council Coordinating Committee Allocation Workgroup Guidance Document,* NMFS Procedure 01-119-01 (effective July 27, 2016 and renewed October 3, 2018); and *Recommended Practices and Factors to Consider When Reviewing and Making Allocation Decisions*, NMFS Procedure 01-119-02 (effective July 27, 2016 and renewed October 3, 2018).

various factors the councils should consider in conducting their allocation reviews and when making allocation decisions. The NMFS guidance calls for the councils to develop a structured and transparent process by which allocation reviews are to be conducted.

The Modernizing Recreational Fisheries Management Act of 2018 includes a provision for us to review mixed-use fisheries allocations in the South Atlantic and Gulf of Mexico regions.[11] This report examines, for the South Atlantic and Gulf of Mexico regions, (1) the extent to which the councils have established or revised mixed-use fisheries allocations, (2) key sources of information that may be available to help NMFS and the councils conduct allocation reviews, and (3) the extent to which the councils have developed processes to help guide their allocation reviews.

To conduct our work, we focused on mixed-use fisheries allocations between the commercial and recreational fishing sectors in the South Atlantic and Gulf of Mexico regions.[12] We reviewed the Magnuson-Stevens Act and policies and guidance related to allocations from NMFS and the councils. We interviewed officials from NMFS, the two relevant councils, and the related interstate fisheries commissions. Specifically, we interviewed the following:

- NMFS officials from the agency's Southeast Regional Office and Southeast Fisheries Science Center;
- South Atlantic and Gulf of Mexico council members, including members from state fisheries agencies in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas;
- South Atlantic and Gulf of Mexico council staff, including the two councils' executive directors, economists, and social scientists;

[11]Pub. L. No. 115-405, § 101, 132 Stat. 5355, 5356 (2018). The act defines a mixed-use fishery as a federal fishery in which two or more of the following occur: (a) recreational fishing, (b) charter fishing, or (c) commercial fishing. *Id.* § 3(4). In our report, we consider for-hire fishing (both charter fishing and head boats) to be part of the recreational fishing sector because the South Atlantic and Gulf of Mexico councils generally manage for-hire fishing as part of the recreational sector, according to council staff.

[12]NMFS and the councils may also establish other types of allocations for the fisheries they manage, such as for the use of different fishing gear types.

- members of the two councils' socioeconomic panels, which report to the councils' scientific and statistical committees;[13] and
- the executive directors of the Atlantic and Gulf States Marine Fisheries Commissions.[14]

In addition, to inform our work, we interviewed 46 stakeholders from the commercial and recreational fishing sectors, related industries, and conservation organizations to gather their perspectives, as well as any associated information, on allocations. We included a diversity of stakeholders across the council regions. For example, these stakeholders included fishing associations and individual fishing participants from the commercial and recreational sectors (including charter fishing), seafood dealers or retailers, food and lodging industry representatives, and conservation organizations. We met with many of these stakeholders in person when we attended the June 2019 meetings of the South Atlantic and Gulf of Mexico councils in Florida. In advance of the meetings, each council publicized our attendance at the meeting and provided our contact information so that interested stakeholders could contact us to set up a meeting. We interviewed stakeholders that (1) contacted us before or after the meetings, and (2) contacted us on a first-come, first-served basis at the council meetings.[15] During our interviews, we discussed, among other things, how allocation decisions may affect stakeholders and the councils' processes for reviewing allocations. The results of our interviews with NMFS officials; council members, staff, and socioeconomic panels; and stakeholders cannot be generalized to other regions or stakeholders,

[13]Socioeconomic panels comprise economists and social scientists who provide the councils' scientific and statistical committees with information on potential economic and social implications of fishery management plans. Scientific and statistical committees—which may comprise federal or state officials, academics, or independent experts—evaluate technical aspects of fisheries and advise councils on the scientific adequacy of statistical, biological, economic, and social information as it pertains to fishery management plans.

[14]The Atlantic and Gulf States Marine Fisheries Commissions are interstate compacts that seek to promote better utilization of fisheries, the promotion and protection of such fisheries, and the prevention of physical waste of the fisheries for the Atlantic seaboard and Gulf of Mexico. The Atlantic States Marine Fisheries Commission was formed in 1942 and develops plans to sustain the shared coastal fishery resources of Atlantic coast states from Maine to Florida. The Gulf States Marine Fisheries Commission was established in 1949 and recommends management measures to the governors and legislatures of the five Gulf States (Alabama, Florida, Louisiana, Mississippi, and Texas).

[15]In addition, nine other stakeholders submitted their perspectives on allocations to us in writing.

but provide a range of examples of perspectives on allocations within the South Atlantic and Gulf of Mexico regions.

To determine the extent to which the councils have established or revised mixed-use fisheries allocations, we asked the councils' staff to identify (1) any allocations established or revised for each of the mixed-use fish stocks they manage and what those allocation percentages comprised, and (2) when the councils established or revised those allocations (from 1976, when the Magnuson-Stevens Act was enacted and the councils were established, through December 2019). We analyzed the information to summarize and describe the number of allocations established for mixed-use fish stocks in the two council regions and the extent to which those allocations have been revised. To verify the information provided by the councils, we reviewed related documents, including fishery management plans and plan amendments the councils submitted to NMFS that established or revised allocations for specific fish stocks.[16] To clarify any potential discrepancies in their documents on allocations, we also interviewed council staff or reviewed their written responses to our questions. Based on our review of the documents and information from council staff, we determined that the information on allocations the councils provided is sufficiently reliable for describing the allocations for mixed-use fisheries in the South Atlantic and Gulf of Mexico.

To identify key sources of information that may be available to help NMFS and the councils conduct allocation reviews, we reviewed NMFS' 2016 policy and guidance on establishing and reviewing fisheries allocations and interviewed or received written comments from NMFS officials and staff from the two councils. We reviewed documents on key sources of economic, social, ecological, and other information identified by NMFS officials and council staff, including NMFS and other documents on recreational fishing data collection, stock assessments, economic

[16]According to NMFS' website, the councils develop fishery management plans or plan amendments to, among other things, prevent overfishing, allocate fishing quotas to different fishing groups, implement gear restrictions, and protect sensitive habitats. To help ensure transparency and incorporate stakeholder feedback, proposed decisions included in plans or plan amendments are subject to review and comment by scientists, stakeholders, and the public. In this report, we present the dates the councils established or revised allocations based on the dates the councils submitted fishery management plans or plan amendments to NMFS for review and approval.

analyses, social indicators, and ecosystem or other ecological models.[17] The information sources we include are key sources identified by NMFS and the councils; other sources of information may also be available to NMFS and the councils that are not reflected in our report. In addition, we interviewed or received written comments from NMFS officials and staff and members from the two councils to obtain their perspectives on any challenges related to such information, and to identify steps NMFS or the councils are taking related to the information or challenges. We also reviewed available documents on those steps.

To determine the extent to which the councils have developed processes to help guide their allocation reviews, we obtained documents on the councils' plans for future reviews of mixed-use fisheries allocations. These documents include their council policies for specific criteria that will trigger reviews and available documents on their plans for when and how they plan to conduct those reviews. We compared this information with criteria in NMFS' allocations policy and guidance, the agency's operational guidelines for processes under the Magnuson-Stevens Act and associated regional operating agreements,[18] and the framework for internal controls established by the Committee of Sponsoring Organizations of the Treadway Commission.[19] This framework is

[17]For example, we reviewed NMFS technical memorandums on economic efficiency analyses the agency had conducted for fisheries in the Gulf of Mexico or South Atlantic regions. These analyses examined the economic efficiency of allocations for red snapper and gag, red, and black grouper in the Gulf of Mexico.

[18]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Operational Guidelines for the Magnuson-Stevens Fishery Conservation and Management Act Fishery Management Process*, NMFS Procedure 01-101-03 (effective October 25, 2017); South Atlantic Fishery Management Council, *Operating Agreement Between the South Atlantic Fishery Management Council, NOAA Fisheries Service Southeast Regional Office, and NOAA Fisheries Service Southeast Fisheries Science Center* (January 2014); and Gulf of Mexico Fishery Management Council, *Regional Operating Agreement Between the Gulf of Mexico Fishery Management Council, NOAA National Marine Fisheries Service Southeast Regional Office, NOAA National Marine Fisheries Service Southeast Fisheries Science Center, and NOAA General Counsel, Southeast Section* (August 2016).

[19]Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control-Integrated Framework* (2013). This framework is a common internal control model against which companies and organizations can evaluate their control systems and provides a means to apply internal control to any type of entity. The framework comprises principles related to the five components of internal control, and the *Standards for Internal Control in the Federal Government*—adapted for a government environment—uses the same components and similar language. See GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

recognized as a leading model for designing, implementing, and conducting internal control and assessing the effectiveness of internal control. In addition, we interviewed or received written comments from NMFS officials and council staff and members to obtain information on how the planned allocation reviews may affect their workloads and priorities.

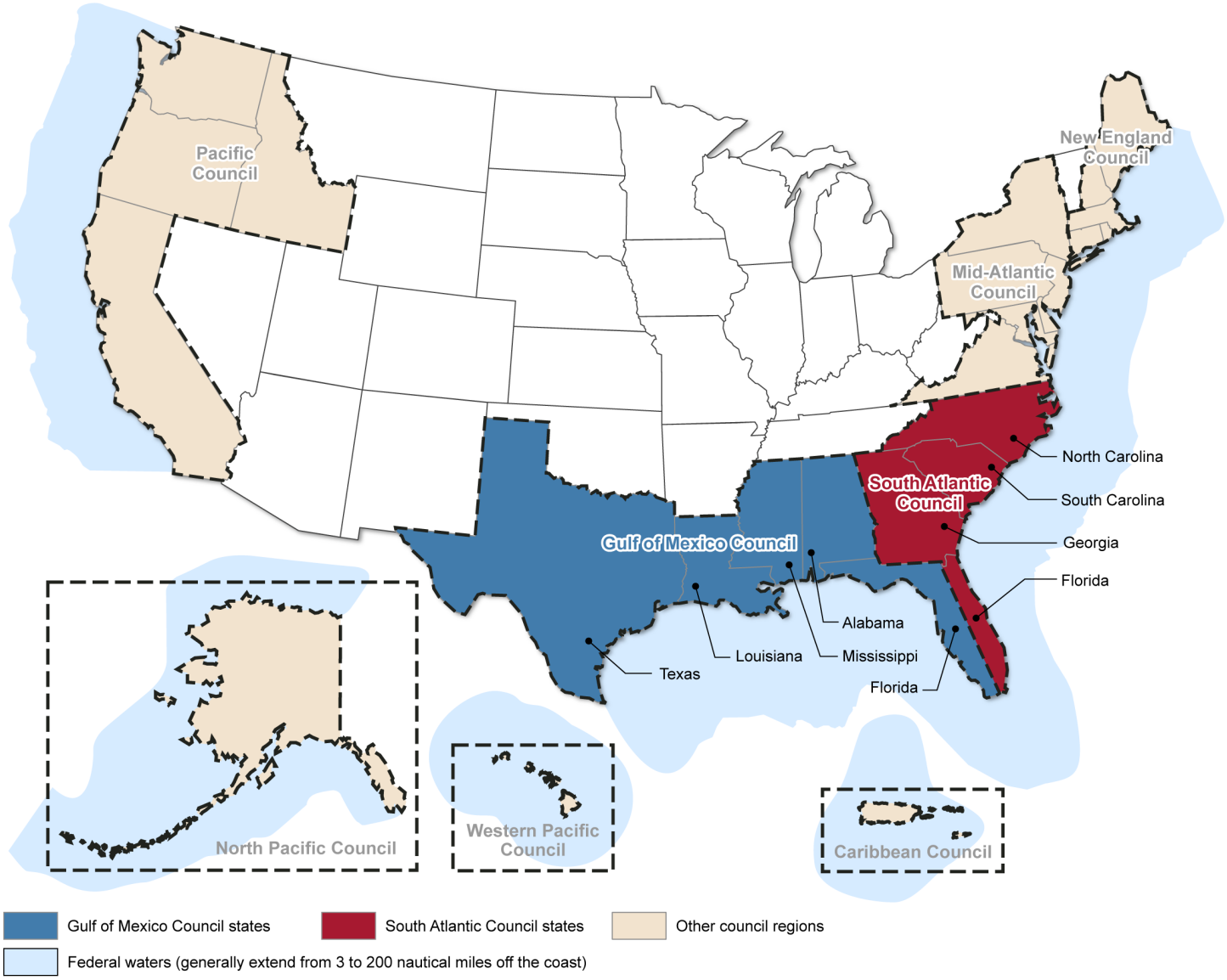
We conducted this performance audit from April 2019 to March 2020 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

NMFS and the eight regional fishery management councils are responsible for managing approximately 460 fish stocks in federal waters, as shown in figure 1.[20]

[20]The number of fish stocks NMFS manages can vary from year to year, according to NMFS officials. For more information, see https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates.

Figure 1: Boundaries of the Eight Regional Fishery Management Councils



Sources: National Marine Fisheries Service officials and *Fisheries of the United States, 2014* (data); Map Resources (map). | GAO-20-216

Note: Coastal states are generally responsible for managing fisheries in waters that extend approximately 3 nautical miles from their coastlines, and the National Marine Fisheries Service and the councils manage fisheries in federal waters, which generally extend from 3 to 200 nautical miles off the coast of the United States. However, federal waters in some areas and for the management of some fish begin at 9 nautical miles. The Western Pacific council includes the Mariana Islands archipelago, American Samoa, and a range of remote island areas in the central and western Pacific Ocean that are not depicted on this map.

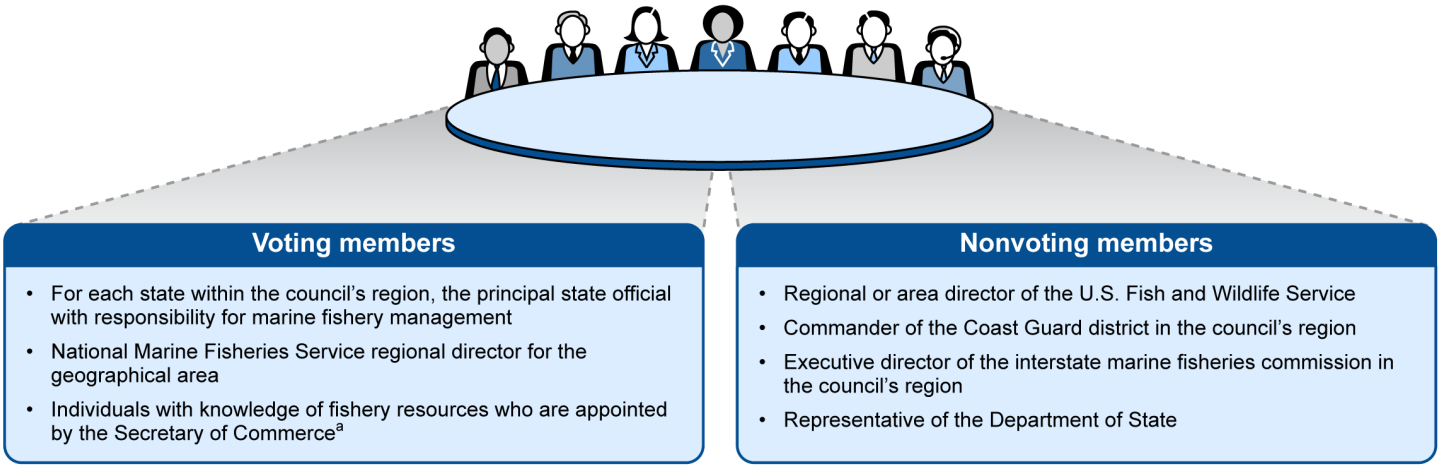
NMFS has overall responsibility for collecting data on fish stocks and ocean conditions and for generating scientific information for the conservation, management, and use of marine resources.[21] NMFS carries out this responsibility primarily through its five regional offices and six regional fisheries science centers, which are responsible for collecting and analyzing data to conduct stock assessments. Stock assessments consider information about the past and current status of a managed fish stock, including information on fish biology, abundance, and distribution that can be used to inform management decisions.[22] To the extent possible, stock assessments also predict future trends of stock abundance. NMFS provides the results of its stock assessments and other analyses, as appropriate, to the councils for use in implementing their respective fisheries management responsibilities. In the South Atlantic and Gulf of Mexico regions, NMFS provides support to the councils' management efforts through its Southeast Regional Office and the Southeast Fisheries Science Center.

Under the Magnuson-Stevens Act, the councils are responsible for managing the fisheries in their region. This includes developing fishery management plans, subject to NMFS approval, based on the best scientific information available and through collaboration with a range of stakeholders. The councils convene committees and advisory panels to assist them in developing research priorities and selecting fishery management options, in addition to conducting public meetings. The councils are to comprise members from federal and state agencies, as well as the commercial and recreational fishing sectors (see fig. 2).

[21]In addition to NMFS' fisheries management responsibilities, the agency is also responsible for, among other things, managing marine species protected under the Endangered Species Act.

[22]We previously reviewed NMFS' fish stock assessment prioritization process. See GAO, *Fish Stock Assessments: Prioritization and Funding*, GAO-14-794R (Washington, D.C.: Sept. 19, 2014).

Figure 2: Membership of the Regional Fishery Management Councils



Sources: 16 U.S.C. § 1852; GAO analysis. | GAO-20-216

[a]For members appointed by the Secretary of Commerce, the governors of the states in the council's region submit to the Secretary a list of nominees who are knowledgeable regarding fisheries conservation and management, or the commercial or recreational harvest of fishery resources in the region. When selecting members, the Secretary is required to ensure, to the extent practicable, a balance of participants from the commercial and recreational sectors. In addition, 16 U.S.C. § 1852(b)(2)(D) directed the governors submitting names for appointment to the Gulf of Mexico Regional Fishery Management Council to include: (1) at least one nominee each from the commercial, recreational, and charter fishing sectors, and (2) at least one other individual who is knowledgeable regarding the conservation and management of fisheries resources in the jurisdiction of the council. That requirement expired at the end of fiscal year 2012.

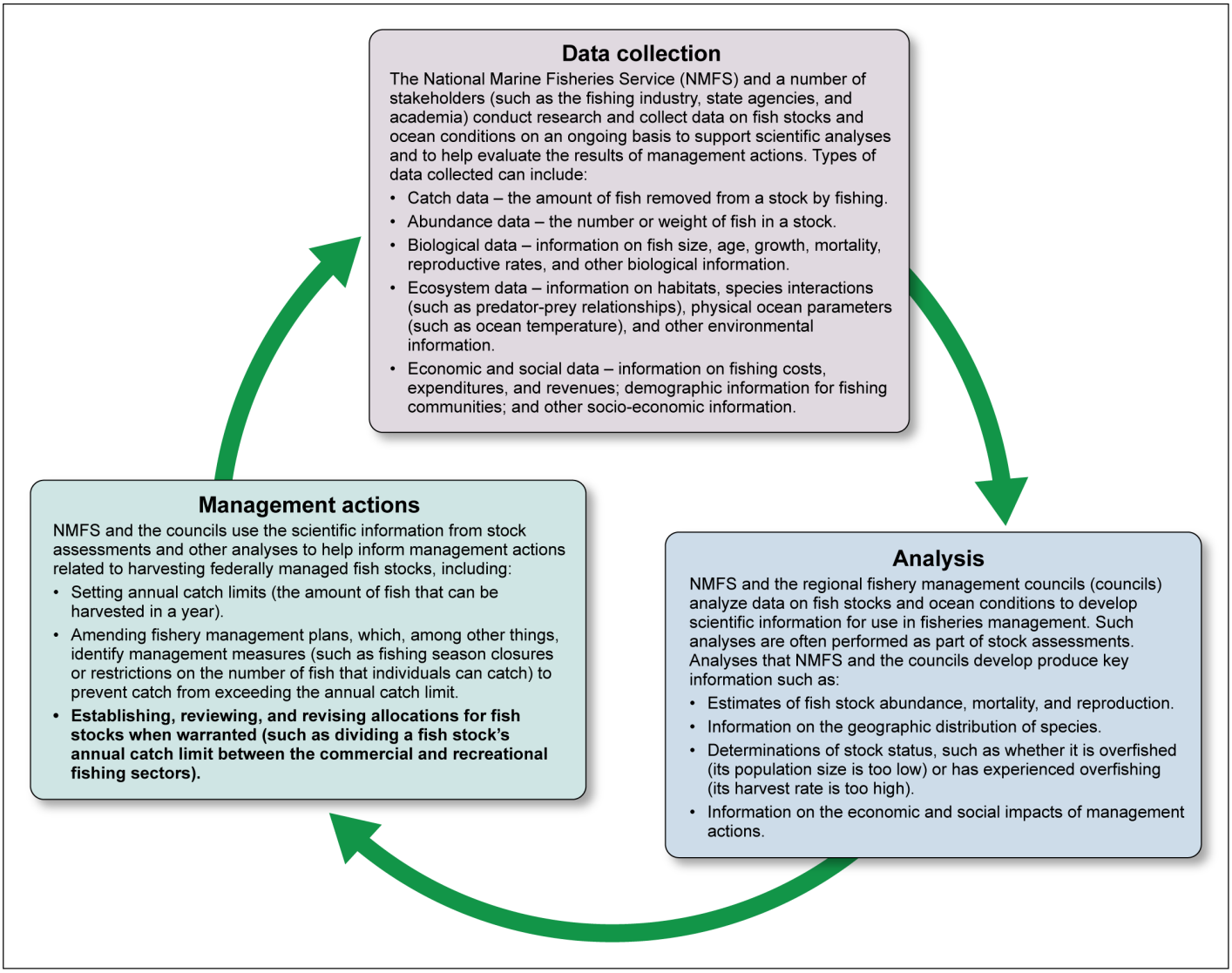
The councils—supported by council staff such as biologists, economists, and social scientists—are responsible for preparing proposed fishery management plans or plan amendments for NMFS review. These plans or amendments are to identify, among other things, conservation and management measures to be used to manage a fishery, including determining the maximum size of a fish stock's allowable harvest. This is generally done by developing annual catch limits for each fish stock, that is, the amount of fish that can be harvested in the year.[23] Fishery management plans or amendments also include establishing or revising any allocations between the commercial and recreational sectors for mixed-use fish stocks where the councils determine it may be warranted.[24] For example, councils may allocate a percentage of a fish

[23]The annual catch limit cannot exceed the recommended acceptable biological catch level set by the council's scientific and statistical committee.

[24]Fishery management plans also identify other management measures that will be used to manage a fishery, such as fishing equipment restrictions, permitting policies, and restrictions on the timing or location of permissible fishing.

stock's annual catch limit between the recreational and commercial fishing sectors. See figure 3 for an overview of the federal fisheries management process.

Figure 3: General Steps in the Federal Fisheries Management Process



Source: GAO analysis of NMFS documentation and information provided by NMFS officials. | GAO-20-216

Council staff facilitate the fisheries management process by organizing council meetings, preparing and providing analyses for those meetings,

and facilitating input from stakeholders and the public on fisheries management issues, among other things.[25] Stakeholders include participants in the commercial and recreational fishing sectors and related industries, such as fishing associations, seafood dealers and processors, food and travel industry representatives, and conservation groups. Once the councils complete proposed fishery management plans or plan amendments, they are to provide them to NMFS for review. NMFS is responsible for determining if the plans or amendments are consistent with the Magnuson-Stevens Act and other applicable laws, and for issuing and enforcing final regulations to implement approved plans.

Tables 1 and 2 highlight the mixed-use fish stocks the South Atlantic and Gulf of Mexico councils manage, respectively.[26]

[25]In addition, the councils maintain scientific and statistical committees and socioeconomic panels to receive specialized input to the councils on fishery management plans or amendments.

[26]For some fish stocks, the councils manage groups of comparable species as complexes of fish. For this report, we count a complex as a single fish stock if the allocation is for the stock complex, rather than for the individual stock within the complex. If the fish stocks within a complex each have their own allocations, we count them as separate fish stocks for reporting purposes. In addition, the councils manage several fish stocks that are exclusively fished by the commercial or recreational sectors, according to council staff. In the South Atlantic, the staff said that the council manages commercial fishing for golden crab and shrimp, as well as recreational fishing for sailor's choice and tomtate (both part of the grunts complex) and scup (part of the porgy complex). The Gulf of Mexico council manages commercial fishing for several types of shrimp. The council also manages recreational fishing for red drum. However, harvest of red drum is not allowed as of December 2019, according to NMFS officials.

Table 1: Mixed-Use Fish Stocks Managed by the South Atlantic Fishery Management Council

Fish stocks managed individually	Fish stocks managed as complexes	
1. Atlantic spadefish	**Deepwater complex:**	**Shallow-water groupers complex:**
2. Bar jack	28. Blackfin snapper	43. Coney
3. Black grouper	29. Misty grouper	44. Graysby
4. Black sea bass	30. Queen snapper	45. Red hind
5. Blueline tilefish	31. Sand tilefish	46. Rock hind
6. Cobia, Gulf group, Florida East Coast Zone[a]	32. Silk snapper	47. Yellowfin grouper
7. Dolphin (mahimahi)	33. Yellowedge grouper	48. Yellowmouth grouper
8. Gag grouper	**Grunts complex:**	**Snappers complex:**
9. Golden tilefish	34. Margate	49. Cubera snapper
10. Gray triggerfish	35. White grunt	50. Gray snapper
11. Greater amberjack	**Jacks complex:**	51. Lane snapper
12. Hogfish[b]	36. Almaco jack	
13. King mackerel, Atlantic group[a]	37. Banded rudderfish	
14. Mutton snapper	38. Lesser amberjack	
15. Red grouper	**Porgy complex:**	
16. Red porgy	39. Jolthead porgy	
17. Red snapper	40. Knobbed porgy	
18. Scamp	41. Saucereye porgy[e]	
19. Snowy grouper	42. Whitebone porgy	
20. Spanish mackerel, Atlantic group[a]		
21. Speckled hind[c]		
22. Spiny lobster[d]		
23. Vermilion snapper		
24. Wahoo		
25. Warsaw grouper[c]		
26. Wreckfish		
27. Yellowtail snapper		

Source: GAO analysis of documents from the South Atlantic Fishery Management Council and information from council staff. | GAO-20-216

Note: Fish stocks listed by complex are managed together as a group. For this report, we count a complex as a single fish stock if the allocation is for the complex, rather than for the individual stock within the complex. If the fish stocks within a complex have their own allocations, as they do in the South Atlantic, we count them as separate stocks for reporting purposes. In addition, the South Atlantic Fishery Management Council manages golden crab and shrimp, which are exclusively fished by the commercial sector, and sailor's choice, tomtate, and scup, which are exclusively fished by the recreational sector, according to council staff. The staff said the council also manages over 130 species of corals but has delegated management of the harvest—which is primarily commercial but not allowed for most species—to the state of Florida.

[a]The South Atlantic and Gulf of Mexico Fishery Management Councils jointly manage cobia, king mackerel, and Spanish mackerel through a single fishery management plan for coastal migratory pelagic resources.

[b]In 2016, the South Atlantic Fishery Management Council split the South Atlantic hogfish stock into two: Georgia-North Carolina hogfish and Florida Keys/East Coast of Florida hogfish.

[c]Harvest is not allowed for speckled hind and warsaw grouper as of December 2019.

[d]The South Atlantic and Gulf of Mexico Fishery Management Councils jointly manage spiny lobster through a single fishery management plan for spiny lobster.

[e]Saucereye porgy in the South Atlantic is, in practice, a recreational fish stock, according to South Atlantic Fishery Management Council staff. Council staff indicated that because the total annual catch limit for the fish stock is low, there is no commercial fishing in practice for the stock.

Table 2: Mixed-Use Fish Stocks Managed by the Gulf of Mexico Fishery Management Council

Fish stocks managed individually	Fish stocks managed as complexes	
1. Cobia[a]	19. Deep water grouper aggregate complex (snowy grouper, speckled hind, warsaw grouper, and yellowedge grouper)	21. Mid-water snapper complex (blackfin snapper, queen snapper, silk snapper, and wenchman)
2. Cubera snapper	20. Jacks complex (almaco jack, banded rudderfish, and lesser amberjack)	22. Shallow water grouper aggregate complex (black grouper, scamp, yellowfin grouper, and yellowmouth grouper)
3. Gag grouper		23. Tilefish aggregate complex (blueline tilefish, golden tilefish, and goldface tilefish)
4. Goliath grouper[b]		
5. Gray snapper		
6. Gray triggerfish		
7. Greater amberjack		
8. Hogfish		
9. King mackerel, Gulf group[a]		
10. Lane snapper		
11. Mutton snapper		
12. Red grouper		
13. Red snapper[c]		
14. Spanish mackerel[a]		
15. Spiny lobster[d]		
16. Yellowtail snapper		
17. Vermilion snapper		
18. Corals (more than 140 species)[e]		

Source: GAO analysis of documents from the Gulf of Mexico Fishery Management Council and information from council staff. | GAO-20-216

Note: Fish stocks listed by complex are managed together as a group. For this report, we count a complex as a single fish stock if the allocation is for the complex, rather than for the individual stock within the complex. If the fish stocks within a complex have their own allocations, we count them as separate fish stocks for reporting purposes. In addition, the Gulf of Mexico Fishery Management Council manages commercial fishing for several types of shrimp. The council also manages recreational fishing for red drum; however, harvest of red drum is not allowed as of December 2019, according to National Marine Fisheries Service officials.

[a]The South Atlantic and Gulf of Mexico Fishery Management Councils jointly manage cobia, king mackerel, and Spanish mackerel through a single fishery management plan for coastal migratory pelagic resources.

[b]Harvest is not allowed for goliath grouper as of December 2019.

[c]In 2019, the Gulf of Mexico Fishery Management Council began taking steps to delegate responsibility for the management of certain recreational fishing for red snapper in federal waters to the coastal states in the Gulf of Mexico. Specifically, following a pilot program in 2018 and 2019, the council completed an amendment to the fishery management plan for reef fish in May 2019 that would, among other things, allow a Gulf of Mexico state with an approved management program to manage private angling for red snapper in federal waters. The Secretary of Commerce approved the amendment on November 5, 2019 and the final rule implementing the amendment was under development as of December 2019, according to National Marine Fisheries Service officials.

[d]The South Atlantic and Gulf of Mexico Fishery Management Councils jointly manage spiny lobster through a single fishery management plan for spiny lobster.

[e]Harvest of stony corals, sea fans (soft corals), and wild live rock is generally prohibited in federal waters of the Gulf of Mexico as of December 2019.

Fisheries Allocations

Under the Magnuson-Stevens Act's national standards for fishery management plans, allocations are to be fair and equitable to all U.S. fishermen; reasonably calculated to promote conservation; and carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share.[27] NMFS guidelines for the national standards further indicate that in making allocations, councils should consider certain factors relevant to the fishery management plan's objectives. These factors include economic and social consequences of the allocations, food production, consumer interest, dependence on the fishery by present participants and coastal communities, efficiency of various types of gear used in the fishery, transferability of effort to and impact on other fisheries, opportunity for new participants to enter the fishery, and enhancement of opportunities for recreational fishing. In reviewing and approving fishery management plans and amendments, NMFS is responsible for ensuring that the councils' allocation decisions comply with the Magnuson-Stevens Act's national standards. In this report, the terms "established" and "revised" allocations refer to allocations established or revised by the councils and subsequently approved by NMFS, unless otherwise stated.

Historically, mixed-use fisheries allocations have been based predominantly on data estimating each fishing sector's past use of the resource, according to NOAA. To collect commercial and recreational data, NMFS works with partners such as coastal states and interstate marine fisheries commissions. In particular, for the commercial fishing sector, NMFS collects data on landings, which include the weight and value of fish stocks sold to seafood dealers using a network of cooperative agreements with states.[28] For recreational fishing, NMFS uses data from its Marine Recreational Information Program, which the agency began implementing in 2008 in place of the Marine Recreational

[27]Pub. L. No. 94-265, § 301(a)(4), 90 Stat. 331, 346 (1976) (codified as amended at 16 U.S.C. § 1851(a)(4)). The national standards are statutory principles that must be followed in any fishery management plan.

[28]Landings are defined as the number or poundage of fish unloaded by commercial fishermen and sold to seafood dealers or brought to shore by private anglers for personal use.

Fisheries Statistics Survey. The Marine Recreational Information Program collects data on private anglers' fishing effort and catch rates and uses these to estimate total recreational fishing catch.[29] NMFS officials said that the program also collects information to estimate recreational landings. The program collects these data through such methods as mail surveys and shore-side interviews of anglers at public access fishing sites.[30]

Recognizing the difficulty in making allocation decisions—in part because allocations may be perceived as unfair by some stakeholders—NMFS commissioned a nationwide study in 2012 to examine allocation issues and gain stakeholders' perspectives from commercial and recreational fishing sectors.[31] The results of the study showed widespread dissatisfaction with how past allocation decisions were made. The study found little consensus on how to address concerns with allocations. For example, some stakeholders said that some allocations were outdated and that changes over time in human population, seafood demand, and recreational fishing warranted a comprehensive examination of allocations. Other stakeholders expressed concern that a uniform approach to allocation policy could harm fishing sectors, while others noted that it is important for the councils to have the flexibility to make regionally-focused decisions. The study concluded that many stakeholders may continue to view allocations as unbalanced or unfair unless the outcomes align with the positions they seek. The study recommended that NMFS take a number of steps to address allocation issues, including increasing stakeholder engagement in allocation decisions, periodically reviewing allocations, and creating a list of factors to guide allocation decisions.

[29]Effort measures the number of angler trips, and catch rates measure the average number and size of fish per trip—by species—that are brought to shore, caught and used as bait, or discarded (i.e., caught but then released alive or dead).

[30]For more information on the Marine Recreational Information Program, see https://www.fisheries.noaa.gov/topic/recreational-fishing-data. We previously reported on recreational fisheries data. See GAO, *Recreational Fisheries Management: The National Marine Fisheries Service Should Develop a Comprehensive Strategy to Guide Its Data Collection Efforts*, GAO-16-131 (Washington, D.C.: Dec. 8, 2015).

[31]Lapointe, George, *Marine Fishery Allocation Issues: Findings, Discussion, and Options* (George Lapointe Consulting LLC, December 2012).

In response to the 2012 study, NMFS issued a fisheries allocation review policy in 2016 and two guidance documents to the councils,[32] intended to help the councils and NMFS review and update allocations.[33] The objective of the NMFS policy was to describe the fisheries allocation review process, which called for using an adaptive management approach.[34] NMFS policy defined fisheries allocation review as the evaluation that leads to the decision of whether or not the development and evaluation of allocation options is warranted, but the allocation review is not, in and of itself, an implicit trigger to consider alternative allocations.

Through its policy, NMFS established a multi-step process for reviewing and potentially revising fisheries allocations. Specifically, once an allocation review trigger has been met (as described below), the councils are to complete an allocation review. For this review, NMFS policy does not call for in-depth analyses but calls for a clear articulation of how objectives are or are not being met and a clear rationale and documentation on relevant factors considered. Based on the allocation review, the councils may decide to maintain existing allocations, or proceed to evaluate allocation options for a fishery management plan amendment. When proceeding with this next step, the councils are to undertake formal analyses and follow the fishery management plan

[32]NMFS developed the policy and guidance in coordination with the Council Coordination Committee. The reauthorization of the Magnuson-Stevens Act in 2007 permitted the councils to establish a Council Coordination Committee, which consists of the chairs, vice chairs, and executive directors from each council, or other council members or staff, as appropriate. Pub. L. No. 109-479, §103(g), 120 Stat. 3575, 3581 (2007) (codified at 16 U.S.C. § 1852(*l*)). The committee meets twice each year to discuss issues relevant to all councils, including issues related to the implementation of the Magnuson-Stevens Act.

[33]National Marine Fisheries Service, *Fisheries Allocation Review Policy, Criteria for Initiating Fisheries Allocation Reviews,* and *Recommended Practices and Factors to Consider When Reviewing and Making Allocation Decisions*. In addition, a 2018 NMFS technical memorandum recommended that councils develop and document a process for making allocation decisions when fish stocks change their distributions. See Karp, M. A., J. Peterson, P. D. Lynch, and R. Griffis (editors), *Accounting for Shifting Distributions and Changing Productivity in the Fishery Management Process: From Detection to Management Action*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-188 (Silver Spring, MD: 2018).

[34]NMFS policy defined adaptive management as the ongoing process of evaluating if management objectives have been met and adjusting management strategies in response. It stated the process includes periodic re-evaluation and updating of the management goals and objectives to ensure they are relevant to current conditions and needs.

amendment process to ultimately recommend that an existing allocation either be retained or revised.

To supplement its fisheries allocation review policy, NMFS also issued two guidance documents, as follows:

- **Criteria for initiating fisheries allocation reviews.**[35] NMFS guidance recommended that the councils establish criteria for initiating allocation reviews—or allocation review triggers—within 3 years, or as soon as practicable, for all fisheries that have allocations between sectors. The guidance identified three types of potential criteria for allocation review triggers: (1) time-based, which include provisions for periodic allocation reviews at specific time intervals on a regular basis; (2) public interest-based, which provide an opportunity for the public to express interest in allocation reviews; and (3) indicator-based, such as triggers based upon economic or other metrics.
- **Factors to consider when reviewing and making allocation decisions**.[36] NMFS guidance outlined four categories of factors for the councils to consider when making allocation decisions, and noted that there may also be other appropriate factors to consider. These factors are not intended to prescribe particular outcomes with respect to allocations, but rather are intended to provide a framework for analysis, according to the guidance. The four categories of factors include:
  - **Fishery performance and change factors**, to assess the current conditions of a fishery and any changes in those conditions that may indicate a need for updated allocations. Such factors could include historical or current trends in catch or landings, the status of the fish stock (for example, whether it is subject to overfishing,

[35]National Marine Fisheries Service, *Criteria for Initiating Fisheries Allocation Reviews*.

[36]National Marine Fisheries Service, *Recommended Practices and Factors to Consider When Reviewing and Making Allocation Decisions.*

is overfished, or is rebuilding[37]), or changes in the distribution of species within the fishery.

- **Economic factors**, to consider the monetary consequences of an allocation, such as by analyzing (1) whether the existing or recommended allocation is the most economically efficient, and (2) the economic impacts of the allocation.[38]
- **Social factors**, to assess the consequences of an allocation on individuals and communities, such as whether an allocation may have disproportionate adverse effects on low income or minority groups or could lead to fishing despite unsafe conditions if access to the fishery is restricted to a limited number of days.
- **Ecological factors**, to consider the potential ecological impacts of allocations, such as impacts on the habitat or predator-prey dynamics of the fishery or of other fisheries within the ecosystem.

South Atlantic and Gulf of Mexico Councils Have Established and Revised Allocations to Varying Degrees

Since the Magnuson-Stevens Act was passed in 1976, the South Atlantic and Gulf of Mexico councils have established and revised allocations to varying degrees for the mixed-use fish stocks they manage in their regions. The South Atlantic council has established allocations for almost all of its mixed-use fish stocks and the Gulf of Mexico council has done so for certain stocks.

[37]A fish stock that is subject to overfishing has a fishing mortality (harvest) rate that is too high to meet long-term sustainable catch level targets under current conditions. Under the Magnuson-Stevens Act, overfished means a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis. 16 U.S.C. § 1802(34). Rebuilding a stock involves taking actions to allow it to grow back to a predefined target level.

[38]According to the guidance, analyses that estimate the monetary value individuals or sectors place on their share of the harvest—their willingness to pay—can inform how allocation changes could improve economic efficiency. Economic impacts may be analyzed using models that include, for example, changes to sales, income, and employment levels.

South Atlantic Council Has Established Allocations for Almost All Mixed-Use Fish Stocks and Revised Most of those Allocations in 2012

Based on documents from the South Atlantic council, we found that the council has established allocations for 50 of the region's 51 mixed-use fish stocks.[39] The council first established an allocation for one fish stock—king mackerel—in 1985. From 1987 through 2010, the council set allocations for eight fish stocks. The council then established most allocations, encompassing 40 of its mixed-use fish stocks, in 2011, with allocations generally based on estimates of each fishing sector's historical landings.[40] The council's most recently established allocation—for a cobia stock—was in 2014, according to council documents. Appendix I provides additional information on the allocations for the mixed-use fisheries in the South Atlantic council region and the years in which the council established and revised allocations.

According to South Atlantic council staff, the council's approach to revising allocations has been to rely on stakeholder input to inform them of allocations that may need revision but to otherwise leave established allocations in place. For example, council staff noted that the allocation for king mackerel—which distributes a percentage of the annual catch limit to each fishing sector—has not changed since 1985 because it is still effective for both the commercial and recreational fishing sectors. Council staff explained that because neither sector has typically caught the amount of king mackerel they have been allocated, the council has not needed to revise the allocation.

As of December 2019, the South Atlantic council had revised allocations for most of their mixed-use fish stocks once, according to council documents, as shown in table 3. The council revised allocations for 30 fish stocks in 2012,[41] based on changes to the source of recreational

[39]The South Atlantic council has not established an allocation for spiny lobster. Council staff said this is because spiny lobster fishing primarily occurs in the waters off Florida, where the state takes the lead in regulating this fishery through a protocol developed with NMFS and the South Atlantic and Gulf of Mexico councils. Outside of these Florida state-managed waters, spiny lobster fishing is subject to a two lobsters-per-person, per-trip catch limit, according to a council document.

[40]For example, the council based allocations for many snapper and grouper stocks on the following formula: 50 percent of each fishing sector's average landings for the period 1986 to 2008, plus 50 percent of each sector's average landings for the period 2006 to 2008, according to a council document.

[41]The 30 fish stocks with allocations revised in 2012 include hogfish, which the council revised in 2012, and then again in 2016.

catch data the council was using in its formulas for calculating allocation percentages.[42]

[42]In 2012, the South Atlantic council changed from using Marine Recreational Fisheries Statistics Survey data to data calculated from NMFS' Marine Recreational Information Program. Specifically, the council adjusted allocation amounts using data from the Marine Recreational Information Program for recreational catch estimates for the years 2004-2008. The council also based allocation amounts on updated recreational catch estimates for 1986-2003. For these estimates, the council used data developed by a regional working group that developed a regional calibration method to recalculate previous recreational fishing estimates for these years.

Table 3: Mixed-Use Fish Stocks with Commercial and Recreational Allocations and Subsequent Revisions in the South Atlantic Fishery Management Council Region, as of December 2019

Fish stocks with allocations established and not revised	Fish stocks with allocations revised once	Fish stocks with allocations revised more than once
1985 • King mackerel, Atlantic group **2006** • Black sea bass **2008** • Gag grouper • Red porgy • Vermilion snapper **2010** • Golden tilefish **2011** • Black grouper • Greater amberjack • Mutton snapper • Red grouper • Red snapper • Speckled hind[b] • Warsaw grouper[b] • Wreckfish • Yellowtail snapper **2014** • Cobia, Gulf group, Florida East Coast Zone	**2012** • Atlantic spadefish • Bar jack • Blueline tilefish • Gray triggerfish • Scamp Deepwater complex: • Blackfin snapper • Misty grouper • Queen snapper • Sand tilefish • Silk snapper • Yellowedge grouper Grunts complex: • Margate • White grunt Jacks complex: • Almaco jack • Banded rudderfish • Lesser amberjack Porgy complex: • Jolthead porgy • Knobbed porgy • Saucereye porgy[c] • Whitebone porgy Shallow-water groupers complex: • Coney • Graysby • Red hind • Rock hind • Yellowfin grouper • Yellowmouth grouper Snappers complex: • Cubera snapper • Gray snapper • Lane snapper **2013** • Wahoo **2014** • Snowy grouper	**1989 and 1998** • Spanish mackerel, Atlantic group **2012 and 2016** • Hogfish[a] **2011, 2013, and 2015** • Dolphin (mahimahi)

Source: GAO analysis of documents from the South Atlantic Fishery Management Council. | GAO-20-216

Note: Years shown represent the year that the council completed its fishery management plan amendment and sent it to the National Marine Fisheries Service for review and approval. For allocations that have not been revised, the dates shown are the years the councils established the allocations. For allocations that have been revised, the years shown are the years the councils revised them. The fish stocks listed as part of complexes are managed together as groups. In the South Atlantic region, the fish stocks within these complexes have their own allocations.

[a]In 2016, the South Atlantic Fishery Management Council split the South Atlantic hogfish stock into two and established allocations for Georgia-North Carolina hogfish and Florida Keys/East Coast of Florida hogfish.

[b]Harvest is not allowed for speckled hind and warsaw grouper as of December 2019.

[c]Saucereye porgy in the South Atlantic is, in practice, a recreational fish stock, according to South Atlantic Fishery Management Council staff. The staff said because the total annual catch limit for the stock is low, there is no commercial fishing in practice for the stock.

The South Atlantic council has revised few allocations more than once. Specifically, they revised allocations for two fish stocks twice and for one, dolphin, three times.[43] For example, the council first established an allocation for dolphin (also known as mahimahi, dolphinfish, and dorado) in 2003. It established the allocation to maintain the fishery as predominantly recreational and based the allocation on historical landings, according to the council's fishery management plan (see fig. 4). According to council documents, the council then revised the dolphin allocation three times:

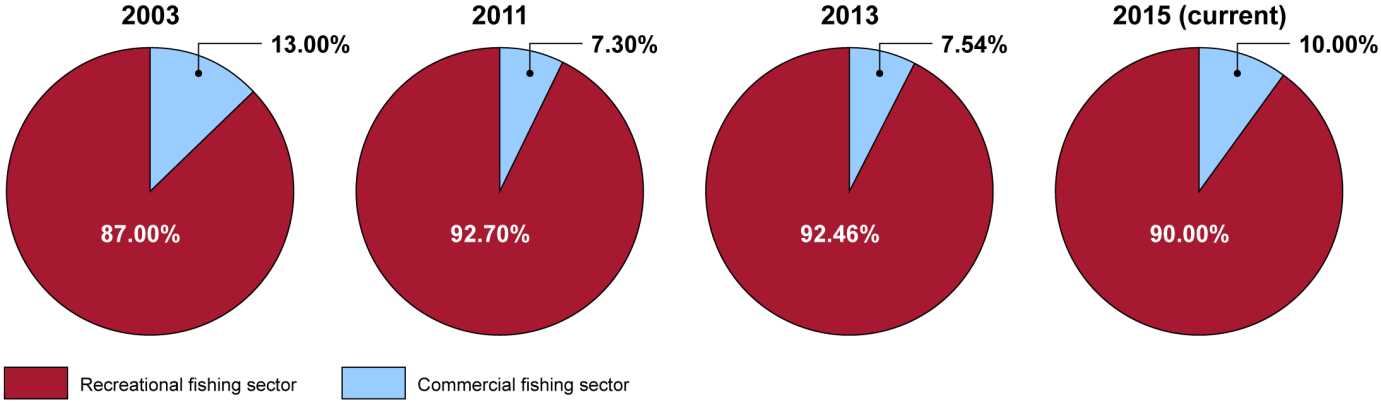
- in 2011, when initially setting annual catch limits for dolphin,
- in 2013, based on changes to the source of recreational catch data used to calculate allocation percentages, and
- in 2015, because the recreational sector had not been catching the amount of fish it was allocated, and the council was concerned that the commercial sector could exceed its allocation in the future.

[43]In addition, the council began work in March 2016 on a draft fishery management plan amendment that considers alternatives for revising dolphin and wahoo allocations by increasing the recreational sector's allocation. The allocation alternatives under consideration were based on catch and landings data. At the council's December 2019 meeting, the council postponed discussion of the amendment until its June 2020 meeting.

Figure 4: History of the Commercial and Recreational Allocation for Dolphin in the South Atlantic, as of December 2019

Also known as mahimahi, dolphinfish, and dorado, dolphin are found in the Atlantic and Gulf of Mexico, where they are caught from Massachusetts to Texas, as well as the Caribbean and Pacific. They can grow up to almost 7 feet and 88 pounds and live up to 5 years.

Commercial and recreational allocations over time for dolphin in the South Atlantic:



Source: GAO analysis of documents from the National Marine Fisheries Service and South Atlantic Fishery Management Council. | GAO-20-216

Note: Years shown represent the year that the South Atlantic Fishery Management Council sent a fishery management plan amendment to the National Marine Fisheries Service for its review and approval. The allocation represents each sector's percentage of the annual catch limit for dolphin, as measured in pounds of whole fish. The council has set allocation percentages to two decimal places, as indicated in the figure.

The extent to which the South Atlantic council may have considered other revisions to allocations is unclear. For example, South Atlantic council staff said that their council had deliberated on revising allocations for some fish stocks at council meetings, but they do not have records of the deliberations because the council decided not to make revisions and did not initiate related fishery management plan amendments. South Atlantic council staff explained that they document all allocation revisions through fishery management plan amendments, but they have not otherwise

formally documented reviews that did not result in revisions.[44] Council staff said they recognize the need to better document such reviews in the future; however, the council did not identify how it plans to do so, as discussed later in this report.

Gulf of Mexico Council Has Established Allocations for Certain Mixed-Use Fish Stocks and Revised Three of Those Allocations in 2008

The Gulf of Mexico council established commercial and recreational allocations for nine of the region's 23 mixed-use fish stocks, according to documents from the council (see app. I for allocations for the mixed-use fisheries in the Gulf of Mexico council region). Council staff said most of the council's allocations were made based on estimates of each sector's historical landings. The council has not established allocations for most mixed-use fish stocks in the region because allocations for these stocks have not been warranted, according to council staff.[45] Council staff said the council generally considers establishing allocations when stakeholders identify issues, or if new information such as a stock assessment becomes available and indicates that allocations may be needed to help manage a fish stock. In the absence of such information, the Gulf of Mexico council manages the fish stocks with other methods—for example, with seasonal closures or trip or bag limits, which establish the number of fish that can be legally taken in a specified period.

As of December 2019, the Gulf of Mexico council had revised allocations for three mixed-use fish stocks, as shown in table 4. For example, the council revised the allocation for red grouper in 2008 to increase the recreational sector's allocation after a stock assessment indicated the fishery had recovered from overfishing, according to a council document. In 2008, the council also revised the gag grouper allocation to increase the commercial sector's allocation. In addition, the Gulf of Mexico council completed a fishery management plan amendment in 2015 that revised the red snapper allocation by increasing the recreational sector's percentage. However, after the Secretary of Commerce approved the amendment in 2016, a U.S. District Court vacated the amendment in

[44]South Atlantic council staff said that in 2019 the council began to convert its historical meeting minutes and final documents into a searchable format that will improve the council's ability to track past discussions of allocations. They said that this project will take several years to complete.

[45]Specifically, the council has not established allocations for the following mixed-use fish stocks: (1) cobia; (2) corals; (3) cubera, (4) gray, (5) lane, (6) mutton, (7) vermillion, and (8) yellowtail snapper; (9) goliath grouper; (10) hogfish; (11) Spanish mackerel; (12) spiny lobster; (13) the Jacks complex (almaco jack, banded rudderfish, and lesser amberjack); and (14) the mid-water snapper complex (blackfin snapper, queen snapper, silk snapper, and wenchman).

2017, and the council returned to the initial allocation established for red snapper.[46]

Table 4: Mixed-Use Fish Stocks with Commercial and Recreational Allocations and Subsequent Revisions in the Gulf of Mexico Fishery Management Council Region, as of December 2019

Fish stocks with allocations established and not revised	Fish stocks with allocations revised once
1985	**2008**
• King mackerel, Gulf group	• Gag grouper
1989	• Greater amberjack[c]
• Red snapper[a]	• Red grouper
2008	
• Gray triggerfish	
2011	
• Deep water grouper aggregate complex (snowy grouper, speckled hind, warsaw grouper, and yellowedge grouper)[b]	
• Shallow water grouper aggregate complex (black grouper, scamp, yellowfin grouper, and yellowmouth grouper)[b]	
• Tilefish aggregate complex (blueline tilefish, golden tilefish, and goldface tilefish)[b]	

Source: GAO analysis of documents from the Gulf of Mexico Fishery Management Council. | GAO-20-216

Note: Years shown represent the year that the council completed its fishery management plan amendment and sent it to the National Marine Fisheries Service (NMFS) for review and approval. For allocations that have not been revised, the dates shown are the years the councils established the allocations. For allocations that have been revised, the years shown are the years the councils revised them. The fish stocks listed as part of complexes are managed together as groups. In the Gulf of Mexico region, the fish stocks within these complexes do not have their own allocations.

[a]In 2015, the Gulf of Mexico Fishery Management Council completed a fishery management plan amendment that revised the red snapper allocation. However, after the Secretary of Commerce approved the amendment in 2016, a U.S. District Court vacated the amendment in 2017 and the council returned to the initial allocation established for red snapper. *See Guindon v. Pritzker*, 240 F. Supp. 3d 181 (D.D.C. 2017).

[b]According to NMFS officials, the Gulf of Mexico Fishery Management Council established allocation percentages for each complex as a whole, based on quotas for commercial fishing established for these complexes. Recreational allocation percentages for the complexes represent the remainder of allowable harvest, after factoring in quota amounts.

[46]*Guindon v. Pritzker*, 240 F. Supp. 3d 181 (D.D.C. 2017). The court held that the revised allocation was not fair and equitable and therefore violated National Standard 4. The council also began work in January 2018 on a separate fishery management plan amendment to consider revising red snapper allocations. As of August 2019, the council decided to postpone further work on the amendment until 2020, to review our report and further progress in calibrating estimates of recreational fishing for red snapper through the Marine Recreational Information Program, according to council documents.

[c]For greater amberjack, the council did not revise the allocation directly; instead, the council indirectly revised the commercial and recreational allocations by establishing harvest reductions that were applied unequally to these fishing sectors, according to a 2008 fishery management plan amendment.

Gulf of Mexico council staff said the council has not identified a need to revise allocations for the other mixed-use fish stocks in the region with allocations. For instance, for the deep water grouper and tilefish complexes, council staff said there has been limited competition between the recreational and commercial fishing sectors and the council has not needed to revise the allocations initially established for those fish stocks in 2011.

When the Gulf of Mexico council has considered revising allocations, it has done so through fishery management plan amendments, according to council staff. For example, in a 2016 fishery management plan amendment, the council considered revising the allocation for king mackerel because estimates indicated that the recreational sector had not been landing the amount of fish it was allocated. However, the council decided not to revise the allocation, citing the potential for increased recreational fishing for king mackerel in the future.[47]

Various Sources of Information May Be Available to Help NMFS and the Councils Conduct Allocation Reviews

Through our review of agency documents and interviews with NMFS and South Atlantic and Gulf of Mexico council staff, we found that various sources of information may be available to help NMFS and the councils review allocations, but each source presents some challenges to councils for supporting allocation decisions. Councils can use these sources of information to consider the factors NMFS' 2016 guidance calls for—including fishery performance and change, economic, social, and ecological factors—when reviewing allocations.[48] Five key sources of information that NMFS and the councils identified are trends in catch and landings, stock assessments, economic analyses, social indicators, and ecosystem models. NMFS officials said that the councils would like to incorporate these key sources into their allocation reviews, and use such information in supporting future allocation decisions. However, they said

[47]For example, the amendment noted that an increase in the recreational bag limit and recent short recreational seasons for other popular fish could result in more fishing effort shifting to king mackerel. However, the amendment also noted it seemed unlikely that recreational fishing for king mackerel would increase substantially in the near future, even with an increase in the bag limit.

[48]The guidance states that the factors are intended to provide a framework for analyses, but that the priority and weight afforded each factor may vary depending on such things as the fishery, the objectives of the fishery management plan or the allocation, and overarching council goals.

the availability, specificity, or quality of information can present challenges to using some of the information. In particular, they noted that available information other than landings is often sparse and uncertain for many fish stocks. As a result, the officials said it may be difficult for the councils to use such information as the basis for allocation decisions. NMFS is taking some steps to improve the information available, as discussed below.

Trends in Catch and Landings

NMFS' 2016 guidance states that changes in the performance or conditions of a fishery may indicate the need for updated allocations. Fishery performance and change factors include trends in catch or landings. Data on historical and current catch and landings can provide the councils with important information about demand, according to NMFS guidance, including whether a fishing sector may be catching above or below its allocation. Generally, NMFS collects landings data for commercial fisheries from state fisheries agencies, who obtain landings data from monthly reports submitted by seafood dealers on the weight and value of fish sold at the dock. NMFS collects data to estimate recreational catch and landings through survey and interview methods through its Marine Recreational Information Program.

However, recreational catch estimates present some limitations. A 2017 National Academies study noted that obtaining reliable data on recreational catch can be challenging because of several attributes of the recreational fishing sector.[49] For example, the greater number of recreational anglers compared with the number of participants in the commercial fishing sector, and the greater number of access and landing points available to recreational anglers, make it difficult to obtain reliable data on the extent of recreational fishing, according to the study.

In 2018, the Marine Recreational Information Program updated how NMFS estimates recreational catch based on a change in the survey methodology used to collect data from anglers on the Atlantic and Gulf of

[49]National Academies of Sciences, Engineering, and Medicine, *Review of the Marine Recreational Information Program* (Washington, D.C.: The National Academies Press, 2017). We also reported on this topic in 2015. See GAO-16-131.

Mexico coasts.[50] According to NMFS documents, updated recreational catch estimates for many fish stocks are several times higher than previous estimates because of the change in methodology.[51] However, any implications these updated estimates may have for allocations in the South Atlantic and Gulf of Mexico may not be fully understood until NMFS incorporates the estimates into stock assessments, which were scheduled for completion between 2019 and 2021, according to NMFS documents.

Further, in the Gulf of Mexico, states collect recreational catch data through their own programs, which supplement NMFS' Marine Recreational Information Program data. The states' programs use different methodologies, however, which Gulf of Mexico council staff said make it difficult to reconcile the states' recreational fisheries data with NMFS' data on catch estimates. According to an NMFS document, some of the different methodologies the states use to design surveys have produced different estimates in years when two or more surveys were conducted side by side, making it difficult to determine the best estimates of recreational catch in the Gulf of Mexico.[52]

NMFS is taking steps to improve its recreational catch estimates. For instance, in September 2019 NMFS issued procedural guidance to help ensure that survey estimates from the Marine Recreational Information Program are based upon the best scientific information available and to promote nationwide consistency in collecting data and estimating

[50]In 2018, the Marine Recreational Information Program completed its transition from using its Coastal Household Telephone Survey to its mail-based Fishing Effort Survey for shore and private boat fishing in the Atlantic and Gulf of Mexico. Because these surveys used two different methodologies to collect data, and because fishery managers need consistent data that can be compared over time, NMFS has been working to calibrate data from the telephone survey to the mail survey. From 2015 to 2018, NMFS worked to calibrate the data using a model it developed to adjust historic estimates so that those estimates can be compared with new estimates. In July 2018, the program released revised estimates of recreational catch and effort for 1981 through 2017.

[51]According to an agency document, NMFS determined that the higher estimates resulted from improved methods for estimating fishing activity and not a sudden rise in fishing.

[52]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Recommended Use of the Current Gulf of Mexico Surveys of Marine Recreational Fishing in Stock Assessments* (July 2019).

recreational catch.[53] NMFS is also working with Gulf of Mexico states to evaluate the critical assumptions made by each state's data collection program and to help ensure that the states' recreational catch estimates are comparable across years and with other states. As part of this effort, NMFS is calibrating recreational catch estimates from Gulf of Mexico states with data from the Marine Recreational Information Program. According to an agency official, NMFS anticipates completing this effort in May 2020.

Stock Assessments

Stock assessments are a key source of information the councils can use to review allocations given the information they provide on the status of fish stocks, according to NMFS documents. Stock assessments can range in complexity from a simple description of historical trends in catch and landings to complex assessment models that incorporate spatial and seasonal analyses in addition to ecosystem or multispecies considerations.[54] Stock assessments are not available for all fish stocks with allocations, however. In the South Atlantic, 32 of the 50 mixed-use fish stocks with allocations do not have stock assessments, according to council staff.[55] Of these fish stocks, NMFS plans to complete stock assessments for three—gray triggerfish, scamp, and white grunt—by 2024, according to South Atlantic council staff. In the Gulf of Mexico, stock assessments are available for the mixed-use fish stocks with

[53]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Implementing Recreational Fishery Catch and Effort Survey Design Changes: Guidance and Procedures for the MRIP Certification Process,* NMFS Procedure 04-114-02 (Sept. 4, 2019).

[54]According to an NMFS report, the level of complexity of a stock assessment has a large impact on the amount of data and effort needed to complete the assessment, as well as on the extensiveness of review needed of assessment results. Some fish stocks necessitate frequent and complex assessments because they have high importance to the fishery, play an important ecosystem role, or are vulnerable to overexploitation. However, other stocks do not need such comprehensive monitoring, according to the NMFS report.

[55]South Atlantic council staff cited the following as reasons why stock assessments may not be conducted: existing data are insufficient for the analyses needed; NMFS staff or funding are not available to perform the analyses; and some species are encountered infrequently during fishing. For fish stocks that do not have stock assessments, the council's scientific and statistical committee has formulated rules for determining acceptable biological catch using proxy measures of landings and the council sets annual catch limits based on these, according to council staff.

allocations, with the exception of the shallow and deep water grouper aggregate complexes.[56]

Stock assessments can provide maps of the spatial distributions of fish stocks and may show changes in those distributions over time, according to NMFS officials. Changes in a fish stock's distribution may lead to allocation disputes, and basing allocations on historical catch may not be appropriate in such situations, according to an NMFS document. NMFS' 2016 guidance states that the councils may need to update allocations if the distributions of fish stocks change over time for reasons such as climate change or natural fluctuations in abundance.[57] However, NMFS officials noted that few stock assessments incorporate spatial models that would allow forecasts of future spatial distributions.[58] To help improve the availability of such information, NMFS is conducting evaluations that will, among other things, assess changes in the distribution of fish stocks in the Gulf of Mexico and South Atlantic in response to regional climate change impacts. NMFS officials said they anticipate completion of these evaluations in 2020, which will help them forecast future spatial distributions for some fish stocks going forward.

In addition, stock assessments are one source of information that the councils can use to assess each fishing sector's expected ecological impacts, according to NMFS officials. For example, NMFS officials said that stock assessments commonly provide information on each sector's discards—fish intentionally thrown back. Discards may be caught as bycatch—that is, incidentally to the harvest of the primary fish stock targeted. NMFS' 2016 guidance states that councils can consider the expected impacts of each fishing sector's allocation on bycatch and

[56]A stock assessment is available for black grouper, which is within the shallow water grouper aggregate complex.

[57]A 2018 NMFS technical memorandum recommended that councils develop and document a process for making allocation decisions when fish stocks change their distributions. See Karp, M. A., J. Peterson, P. D. Lynch, and R. Griffis (editors), *Accounting for Shifting Distributions and Changing Productivity in the Fishery Management Process: From Detection to Management Action*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-188 (Silver Spring, MD: 2018).

[58]In addition, in 2016, we found that NMFS and the councils have limited stock-specific information about the magnitude and timing of climate change effects—such as changes in distribution—for federally managed fish stocks. See GAO, *Federal Fisheries Management: Additional Actions Could Advance Efforts to Incorporate Climate Information into Management Decisions*, GAO-16-827 (Washington, D.C.: Sept. 28, 2016).

bycatch mortality.[59] However, the availability and certainty of bycatch and discard information can vary, according to NMFS officials.

NMFS is taking steps to improve information on bycatch and discards. For instance, beginning in 2020, the for-hire component of the recreational fishing sector is to use an electronic system to report its bycatch and discards in the South Atlantic and Gulf of Mexico, according to NMFS officials. The officials said that the commercial fishing sector will begin using this system by 2023. NMFS officials said that the agency is also developing a model that will, among other things, estimate the number of released fish caught by the recreational fishing sector in the South Atlantic and Gulf of Mexico.[60] The officials said that the first version of the model is focused on gag grouper in the Gulf of Mexico, but that the model could be customized to any fish stock with the necessary data available. As of December 2019, NMFS officials anticipated completion of the model by late 2020 and estimated that the model would be ready to incorporate into stock assessments in fiscal year 2021 or later.

Economic Analyses

Economic analyses can provide information on the economic consequences of allocations, according to NMFS documents. NMFS' 2016 guidance notes that councils should consider if the current or preferred allocation results in the most economically efficient use of the

[59]According to a 2019 Gulf of Mexico council report, mortality from discards in the recreational fishing sector is a problem in the region. Fish may be discarded because they are under a minimum size limit or out of season, anglers have already retained their bag limit, or they may be voluntarily discarded because anglers prefer to catch and release, according to the report. In October 2019, the Gulf of Mexico council hosted a discard mortality symposium with the goal of reducing discard mortality from recreational fishing efforts. See Gulf of Mexico Fishery Management Council, *Release Mortality Symposium Summary Report* (October 2019).

[60]According to NMFS officials, this model is based on work originally done for groundfish in the Northeast. See Lee, Min-Yang, Scott Steinback, and Kristy Wallmo, *Applying a Bioeconomic Model to Recreational Fisheries Management: Groundfish in the Northeast United States,* Marine Resource Economics, volume 32, number 2 (Chicago, IL: Feb. 3, 2017).

fishery resource.[61] According to the guidance and NMFS officials, economic efficiency refers to how well scarce resources are used in production and consumption, and is achieved when all resources are allocated to their most valuable productive use. In principle, an allocation is most economically efficient when the net economic benefits to the commercial and recreational fishing sectors in total are maximized.[62] If net economic benefits are not maximized, then modifying the allocation may increase economic efficiency and economic benefits to the nation. NMFS officials said the agency focuses on conducting economic efficiency analyses to help guide allocation reviews.[63] Economic efficiency analyses can help NMFS and the councils analyze whether a proposed change in an allocation would generate greater net economic benefits for society (that is, improve economic efficiency), compared with the current allocation, according to NMFS officials.

We found the councils face challenges in using economic efficiency analyses in allocation decisions. According to NMFS officials and the agency's published research, reliable data for estimating economic values associated with recreational fishing may not be readily available. This is because no market prices for fish caught by private anglers are available and thus, non-market valuation techniques must be used to estimate the

[61]Under the Magnuson-Stevens Act, National Standard 5 provides that fishery management plan measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose. 16 U.S.C. § 1851(a)(5). National Standard 5 Guidelines state that this standard prohibits only those measures that distribute fishery resources on the basis of economic factors alone and that have economic allocation as their only purpose. 50 C.F.R. § 600.330(e). The guidelines also explain that given a set of objectives for the fishery, a fishery management plan should contain management measures that result in as efficient a fishery as is practicable or desirable. 50 C.F.R. § 600.330(b)(1).

[62]More specifically, net economic benefits are maximized at the allocation where the marginal values are equalized across the commercial and recreational sectors. In principle, net benefits are measured in terms of changes in consumer and producer surplus. Consumer surplus is the difference between the amounts consumers are willing to pay for goods and services, and the amounts they actually pay. Producer surplus is the difference between the amounts producers actually receive for providing goods and services, and the economic cost producers incur in doing so.

[63]According to NMFS' 2016 guidance, the councils should only use certain data points as measured by economic impact analyses to understand the potential short-term distributive effects of allocation decisions on the affected communities. For example, a change in an allocation may increase seafood sales and business income in one community but decrease them in another. However, NMFS officials said they discourage using economic impact analyses when considering allocations because economic impact analyses do not measure changes in economic welfare.

marginal value of fish to recreational anglers.[64] For example, a 2014 NMFS study on the economic efficiency of allocations for gag, red, and black grouper found that there are insufficient data on the recreational harvest by grouper species to generate statistically reliable estimates of economic value for each fish stock.[65]

In addition, it is difficult to estimate the economic value associated with one fish stock because recreational anglers may be willing to catch other species of fish if fishery managers limit anglers' access to a particular stock, according to members of both councils' socioeconomic panels. This transfer of effort from one fish stock to another makes it difficult to determine which fish stock drives the economic value that anglers associate with fishing. Further, a 2014 NMFS study on the economic efficiency of red snapper allocations indicated that a relevant market price that could be used as a benchmark for the recreational estimates is unavailable. The study found that in prior work the agency attempted to use charter fishing trip prices to address this concern, but no current data on charter prices existed to update that analysis.[66] As a result, the study cautioned against comparing estimates of recreational value to that in the commercial sector, which is a key aspect of determining an economically efficient allocation.

Moreover, two 2014 NMFS studies found that there are also methodological and data challenges related to obtaining economic information from the commercial fishing sector.[67] For example, the studies raised questions about the quality of some of the price data that were used in developing estimates of economic values for the commercial

[64]Agar, Juan J. and David W. Carter, *Is the 2012 Allocation of Red Snapper in the Gulf of Mexico Economically Efficient?,* National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-659 (Miami, FL: June 2014).

[65]Agar, Juan J. and David W. Carter, *Are the 2012 Allocations of Gag, Red, and Black Grouper in the Gulf of Mexico Economically Efficient?,* National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-660 (Miami, FL: June 2014).

[66]Agar and Carter, *Is the 2012 Allocation of Red Snapper in the Gulf of Mexico Economically Efficient?*.

[67]Agar and Carter, *Is the 2012 Allocation of Red Snapper in the Gulf of Mexico Economically Efficient?* and *Are the 2012 Allocations of Gag, Red, and Black Grouper in the Gulf of Mexico Economically Efficient?*.

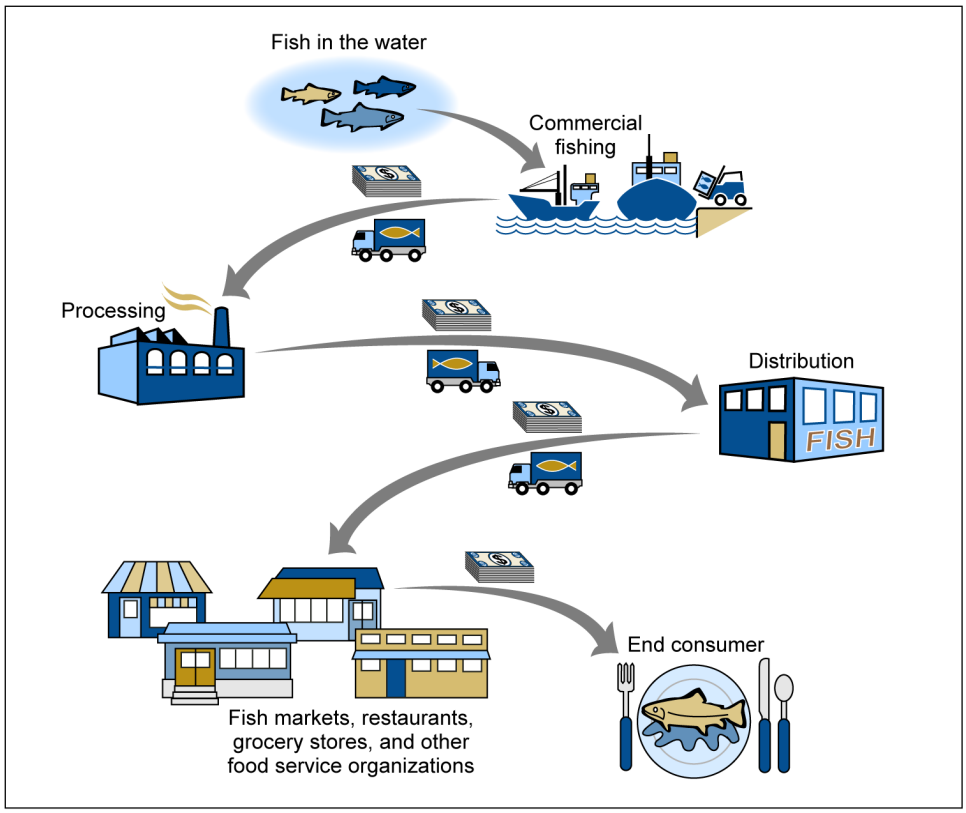
sector.[68] In addition, the studies' estimates of the economic value of commercial fishing did not include the potential net value derived from other components of the commercial seafood supply chain, such as the processing, distribution, and sale of the fish to the end consumers, according to the NMFS studies and agency officials (see fig. 5).[69] These NMFS studies noted that data for estimating the values from these other components are not readily available. Council staff and members, socioeconomic panel members, and fishery stakeholders we interviewed noted the importance of including the value of fish to the end consumers when considering the economic value of commercial fishing. To estimate the values of these other components of the commercial seafood supply chain, NMFS would need information about the consumer demand for fish as a function of domestic and international production, as well as information on changes in the price of the fish as they move from the dockside to retail markets, according to a separate NMFS study.[70]

[68]Specifically, the 2014 NMFS studies used lease prices for commercial fishing quotas and other information to derive willingness to pay estimates for the commercial sector. However, the studies stated that many of the lease prices were low and that it is vital to ensure that correct prices are reported if the data are to be used in an economic analysis.

[69]Specifically, NMFS' 2014 studies indicated that the estimates of the economic value of commercial fishing did not include consumer surplus—the difference between the price that consumers pay and the price they are willing to pay for a service or product.

[70]Carter, David W., Juan J. Agar, and James R. Waters, *Economic Framework for Fishery Allocation Decisions with an Application to Gulf of Mexico Red Grouper*, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-576 (Miami, FL: 2008).

Figure 5: Simplified Diagram of a Seafood Supply Chain for Commercial Fishing



Source: GAO. | GAO-20-216

NMFS officials said they are taking some steps related to improving economic analyses that the councils could consider in allocation reviews. For example, the agency is developing a manual of best practices for NMFS and council staff responsible for conducting economic analyses. NMFS officials said that they anticipate completing the manual by the end of fiscal year 2020. According to NMFS officials, the manual is intended to help (1) achieve consistency in analyses across the councils and regions, (2) establish an understanding of why economic analyses of allocations are important to fisheries management decisions, as well as their role in complying with various legal requirements and NMFS' policy, and (3) establish an understanding of the basic concepts and tools used in these analyses and how they are expected to be applied in practice. In addition, NMFS conducted a study on the economics of the for-hire fishing sector in federal waters of the South Atlantic and Gulf of Mexico and completed

a report on the study at the end of 2019.[71] Among other things, agency officials said the study provides data sufficient to estimate producer surplus for the for-hire sector. This information could help inform future allocation decisions, according to NMFS officials.

Social Indicators

NMFS has developed social indicators to characterize community well-being for coastal communities engaged in fishing activities, which the councils could consider in reviewing allocations, according to NMFS officials. NMFS' 2016 guidance states that the councils could consider individual, local, and regional fishing dependence and engagement, and that such analyses should include potential impacts on commercial, for-hire, private angler, and subsistence fishing, as well as fishing-related industries if data are available. NMFS' social indicators are numerical measures that describe the well-being of fishing communities in coastal counties across the United States and their level of dependence on commercial and recreational fishing.[72] For example, one indicator describes the vulnerability of fishing communities to disruptive events, such as a change to a fishing sector's access to a fishery. Communities that are dependent on commercial fishing can be more socially vulnerable than other communities to changes, according to an NMFS document.

However, NMFS' social indicators on communities' reliance on and engagement in commercial and recreational fishing are not specific to particular fish stocks. NMFS officials said this makes it challenging for councils to incorporate the information into their allocation reviews for specific fish stocks. The officials said that given current resource limitations and limited data available, it would be difficult to generate social indicators that are specific to fish stocks. In some instances, NMFS has some stock-specific information at the community level for the commercial fishing sector.[73] But NMFS officials said that comparable

[71]Souza, Philip M., Jr. and Christopher Liese, *Economics of the Federal For-Hire Fleet in the Southeast - 2017,* National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-740 (Miami, FL: November 2019).

[72]For more information on NMFS' social indicators, see https://www.st.nmfs.noaa.gov/humandimensions/social-indicators/. See also Jepson, Michael and Lisa L. Colburn, *Development of Social Indicators of Fishing Community Vulnerability and Resilience in the U.S. Southeast and Northeast Regions,* U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-129 (St. Petersburg, FL: 2013).

[73]For example, NMFS has indicators of communities' engagement in and reliance on commercial fishing for certain fish stocks.

information is not available for the recreational sector at the community level, making it difficult to develop fish stock-specific social indicators.

NMFS officials said that the agency continues to work to update and improve social indicators relevant to recreational and commercial fisheries and is exploring other sources to provide better social data for fisheries management decisions. However, NMFS officials did not identify specific steps they plan to take to improve social indicators—such as developing information specific to particular fish stocks—so that the councils could more easily incorporate such information into their allocation reviews.

Ecosystem Models

NMFS' 2016 guidance calls for the councils to consider the potential ecological impacts of allocation alternatives in determining the allocation between different sectors or groups. However, NMFS officials said there are few ecosystem models that incorporate ecological information that could be considered in reviewing allocations, in part because limited quantifiable ecological information is available. They said that it will be difficult to use ecosystem models in allocation decisions until such models are more fully developed.

NMFS officials said they are taking some steps to enhance the use of ecological and ecosystem-based information. For instance, they noted that in 2016, NMFS released a policy to, among other things, establish a framework of guiding principles to enhance and accelerate the implementation of ecosystem-based fisheries management.[74] Ecosystem-based fisheries management is a systematic approach to fisheries management in a geographically specified area that: contributes to the resilience and sustainability of the ecosystem; recognizes the physical, biological, economic, and social interactions among the affected fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals, according to the policy. Among other things, this approach can help communicate the potential consequences of management decisions—including allocations—across fish stocks and improve the understanding of the potential benefits and effectiveness of management decisions, according

[74]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Ecosystem-Based Fisheries Management Policy,* NMFS Policy 01-120 (effective May 23, 2016 and renewed September 27, 2018).

to the policy. In 2019, NMFS issued plans for implementing ecosystem-based fisheries management in the South Atlantic and Gulf of Mexico.[75]

South Atlantic and Gulf of Mexico Councils Developed Criteria for Initiating Allocation Reviews, but Not Processes for Conducting or Documenting Them

The South Atlantic and Gulf of Mexico councils each established criteria for initiating allocation reviews in response to NMFS' 2016 guidance, but neither council has developed processes to guide how they will conduct or document their allocation reviews. The Gulf of Mexico council has taken initial steps to develop a process for how it will review allocations, and staff from both councils said they are waiting for our report to inform their next steps on developing processes for conducting allocation reviews in the future.

[75]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Ecosystem Based Fisheries Management Implementation Plan for the South Atlantic* (May 2019) and *2019 Gulf of Mexico Ecosystem Based Fisheries Management Implementation Plan* (2019).

Both Councils Established Criteria for Initiating Allocation Reviews

Regional Fishery Management Councils That Have Established Allocation Review Criteria

Of the eight regional fishery management councils (councils), six developed policies by August 2019 establishing specific criteria for initiating allocation reviews. In addition to the South Atlantic and Gulf of Mexico councils, the other four councils' plans include the following:

- The New England council plans to review certain allocations 8 to 10 years after initial implementation.
- The Mid-Atlantic council plans to review Atlantic mackerel allocations at least every 3 years, spiny dogfish allocations at least every 5 years, and certain other allocations every 10 years.
- The North Pacific council plans to review allocations every 10 years.
- The Pacific council plans to review certain allocations every 1 to 2 years.

The four councils also identified public input as a potential allocation review trigger, but they did not specify what threshold of public interest would trigger a review.

The remaining two councils—the Western Pacific and Caribbean—do not have allocations subject to National Marine Fisheries Service (NMFS) policy requiring councils to establish allocation review criteria, according to NMFS officials.

Source: GAO analysis of council documents and information from NMFS officials. | GAO-20-216

The South Atlantic and Gulf of Mexico councils each developed policies that established criteria for initiating allocation reviews. The South Atlantic council's July 2019 policy established certain conditions as the primary criteria for triggering allocation reviews. Specifically, the policy states that the council is to initiate an allocation review for a particular fish stock if any of the following conditions are met:[76]

- the commercial or recreational fishing sector exceeds its annual catch limit or closes prior to the end of its fishing year in 3 out of 5 consecutive years;
- the commercial or recreational fishing sector under harvests its annual catch limit or optimum yield by at least 50 percent in 3 out of 5 consecutive years;[77]
- the council's scientific and statistical committee approves a stock assessment and presents it to the council; or

[76]The South Atlantic council's policy also states that the council's allowance of harvest of speckled hind or warsaw grouper, which have annual catch limits of zero, would trigger an allocation review for those fish stocks.

[77]The Magnuson-Stevens Act defines optimum, with respect to the yield from a fishery, as the amount of fish that (1) will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; (2) is prescribed on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant social, economic, or ecological factor; and (3) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery. 16 U.S.C. § 1802(33).

- the council reviews a fishery performance report.[78]

The South Atlantic council's policy also established time-based triggers as secondary criteria for initiating allocation reviews.[79] Its policy states that the council will review allocations not less than every 7 years if one of the conditions identified in the policy has not already triggered a review. The policy also states that once a review occurs, the next one will be automatically scheduled for 7 years later.

In contrast, the Gulf of Mexico council's April 2019 policy established time-based triggers as its primary criteria for initiating allocation reviews. Specifically, its policy indicates time intervals of 4 to 7 years for reviewing allocations, depending on the particular fish stock, and identifies the planned month and year for beginning each review. The council's policy also identified public interest as a secondary allocation review trigger but did not specify thresholds for the level or type of public input that would trigger an allocation review. According to the policy, the council is to consider relevant social, economic, and ecological conditions as an intermediate step before determining whether public interest will trigger a review.

According to NMFS' 2016 guidance, periodic review of allocations on a set schedule is in several respects the most simple and straightforward criterion for such a review—it is unambiguous and less vulnerable to political and council dynamics. The guidance also states that time-based triggers for initiating allocation reviews might be most suitable for fisheries where the conflict among sectors or stakeholder groups makes the decision to simply initiate a review so contentious that use of alternative criteria is infeasible. In such a situation, a fixed schedule ensures that

[78]South Atlantic council staff said they began in 2017 to develop fishery performance reports using information provided by the council's advisory panels—panels that include representatives from the recreational and commercial fishing sectors and conservation groups that may provide information about trends in fisheries, environmental concerns, and the impacts of any allocation changes. Each fishery performance report is to focus on a specific species and provide insights into regional differences, catch, and regulatory concerns, among other things, according to the council's website.

[79]The 2016 NMFS guidance also identified, as a third option, the potential for public interest-based triggers, to provide an opportunity for the public to express interest in allocation reviews. The South Atlantic council did not select public interest as an allocation review trigger because, according to the council's policy, the council provides sufficient opportunity for public input on allocations and receives substantial and regular comments from the public through scoping and public hearing sessions, general public comment periods held at every council meeting, the public comment form on the council's website, and through other more informal channels.

periodic reviews occur regardless of political dynamics or specific fishery outcomes, according to the guidance. However, the guidance also indicates that, compared with alternative approaches, adherence to a fixed schedule may be less sensitive to other council priorities and the availability of time and resources to conduct such reviews, which could potentially lead to significant expenditures. Therefore, given the inflexible nature of time-based triggers, the guidance recommends that they be used only in those situations where the benefit of certainty outweighs the costs of inflexibility.

The South Atlantic and Gulf of Mexico councils' policies laid out planned schedules for their respective allocation reviews, which both councils adjusted after issuing their policies. Table 5 shows both councils' plans for allocation reviews as of December 2019. For example, the Gulf of Mexico council's policy states that it plans to review the red grouper allocation in 2026. However, in response to the completion of an updated stock assessment for red grouper in July 2019, the council directed its staff in October 2019 to begin work on a fishery management plan amendment to update the red grouper allocation, according to a council document.[80] The stock assessment for red grouper included the Marine Recreational Information Program's updated estimates for recreational landings. The updated estimates approximately doubled previous estimates of recreational landings, according to a council newsletter. Council staff said that applying these updated estimates to the time series the council had used to establish the red grouper allocation could result in a percentage shift of the allocation to the recreational fishing sector.[81] As a result, the council decided to begin review of the red grouper allocation sooner than the policy's scheduled 2026 time frame, according to the staff.

[80]The proposed amendment 53 to the fishery management plan for reef fish in the Gulf of Mexico addressed options for red grouper allocations.

[81]According to NMFS and council documents, if the council used the same allocation formula that it used in establishing the allocation for red grouper, but applied the updated Marine Recreational Information Program's estimates from July 2019, then the allocation for the recreational fishing sector would shift from 24 percent to 41 percent, and the allocation for the commercial sector would shift from 76 percent to 59 percent.

Table 5: South Atlantic and Gulf of Mexico Fishery Management Councils' Planned Schedules for Reviewing Mixed-Use Fish Stock Allocations, as of December 2019

Year	South Atlantic fish stocks	Gulf of Mexico fish stocks
2019	• Dolphin (mahimahi) • Wahoo • Wreckfish	• Red grouper
2020	• Atlantic spadefish • Bar jack • Black grouper • Blackfin snapper • Blueline tilefish • Golden tilefish • Gray triggerfish • Greater amberjack • Hogfish (Georgia-North Carolina stock) • King mackerel, Atlantic group • Red porgy • Scamp • Snowy grouper • Yellowtail snapper **Deepwater complex:** • Blackfin snapper • Misty grouper • Queen snapper • Sand tilefish • Silk snapper • Yellowedge grouper **Grunts complex:** • Margate • White grunt **Jacks complex**: • Almaco jack • Banded rudderfish • Lesser amberjack **Porgy complex:** • Jolthead porgy • Knobbed porgy • Saucereye porgy • Whitebone porgy **Shallow-water groupers complex:** • Coney • Graysby • Red hind • Rock hind • Yellowfin grouper • Yellowmouth grouper **Snappers complex:** • Cubera snapper • Lane snapper	—
2021	• Cobia, Gulf group, Florida East Coast Zone • Vermilion snapper	—
2022	• Gag grouper • Spanish mackerel, Atlantic group	—
2023	• Black sea bass • Hogfish (Florida Keys/East Coast Florida stock) • Mutton snapper • Red grouper	• Red snapper (allocations between the private angling and for-hire components of the recreational allocation)
2024	• Red snapper	—
2025	**Snappers complex:** • Gray snapper	• Gray triggerfish • Greater amberjack • King mackerel

Year	South Atlantic fish stocks	Gulf of Mexico fish stocks
2026	—	• Gag grouper • Red snapper • Deep water grouper aggregate complex (snowy grouper, speckled hind, warsaw grouper, and yellowedge grouper) • Shallow water grouper aggregate complex (black grouper, scamp, yellowfin grouper, and yellowmouth grouper) • Tilefish aggregate complex (blueline tilefish, golden tilefish, and goldface tilefish)

Legend: — = not applicable

Source: GAO analysis of South Atlantic and Gulf of Mexico Fishery Management Council documents and information from council staff. | GAO-20-216

Note: The years shown represent the years in which the councils plan to begin—not necessarily complete—their allocation reviews. This table only includes reviews of allocations between the commercial and recreational fishing sectors or within the recreational sector. The Gulf of Mexico Fishery Management Council also plans to review red snapper allocations among the Gulf of Mexico states in 2024; allocations of king mackerel between zones and between gear types in 2025; and allocations between the Gulf of Mexico and South Atlantic Fishery Management Councils for black grouper, mutton snapper, and yellowtail snapper in 2026. According to South Atlantic Fishery Management Council staff, the council plans to use a single fishery management plan amendment in 2020 to review allocations for Atlantic spadefish; bar jack; black grouper; blackfin snapper; gray triggerfish; hogfish (Georgia-North Carolina stock); scamp; and the deepwater, grunts, jacks, porgy, shallow-water groupers, and snappers complexes.

NMFS' and the Councils' Costs of Establishing, Reviewing, or Revising Allocations

Establishing, reviewing, or revising allocations may involve a variety of costs, according to National Marine Fisheries Service (NMFS) officials and South Atlantic and Gulf of Mexico Regional Fishery Management Council (council) staff, such as:

- NMFS and council staff time for collecting data, conducting analyses, and developing recommendations and proposed revisions;
- council staff time for conducting scoping meetings, public workshops, and hearings; and
- travel, document preparation and review, and information dissemination.

NMFS officials and council staff said that factors that may affect these types of costs include the complexity of the analyses, the number of NMFS or council staff involved in the process, and the degree of public interest. Fishery management plan amendments that establish or revise allocations can be controversial, and will likely have more public hearings and opportunity for public comment than other types of amendments, according to NMFS officials and council staff.

NMFS officials and South Atlantic and Gulf of Mexico council staff said they have not tracked costs of establishing, reviewing, or revising allocations. The councils often make allocation decisions concurrently with other management actions, making it difficult to isolate costs.

Source: GAO analysis of information from NMFS officials and staff from the South Atlantic and Gulf of Mexico councils. | GAO-20-216

In addition, we found that the councils' planned allocation review schedules may affect their workload and other priorities, but it is not clear to what extent. NMFS' 2016 allocation guidance states that the councils' allocation review processes should include consideration of current council priorities, other actions under deliberation, and available resources. NMFS officials and council staff expressed concern that the councils' planned schedules—as identified in their April and July 2019 policies—may negatively affect the workloads and other priorities of NMFS' social scientists, economists, and data analysts and council staff. For instance, staff from both councils said the planned allocation review schedules will increase their workloads and, depending on the nature and substance of how those reviews are conducted, could take resources away from other council activities and lead them to reprioritize or delay those activities. One council's staff also noted that the council members have a difficult time keeping up with existing workloads.

Further, NMFS officials stated the councils' accelerated schedules as of December 2019, as shown in Table 5, will exacerbate the concerns. These schedules include starting reviews for 50 allocations in the South Atlantic between 2019 and 2026, assuming no conditions trigger earlier reviews, and reviews for 10 allocations in the Gulf of Mexico between 2019 and 2026.[82] One NMFS official said that any additional workload for economists and social scientists in the Southeast Fisheries Science Center is difficult to anticipate because it will depend on the type of information the councils would like to use for the reviews and whether additional studies may be needed or data collected. Another NMFS official stated that the regional office will shift priorities from less important tasks and gain efficiencies where possible to accommodate the planned allocation reviews.

[82]In addition, the Gulf of Mexico council plans to review some allocations between gear types, zones, states, or councils, according to the council's policy.

Neither Council Has Developed a Process for How to Conduct or Document Allocation Reviews, Although the Gulf of Mexico Council Began Taking Steps to Develop One

The South Atlantic and Gulf of Mexico councils have not developed processes for how they will conduct or document their allocation reviews to implement NMFS' 2016 policy and related guidance, although the Gulf of Mexico council has begun taking steps to do so. As noted, NMFS policy calls for a multi-step process for reviewing and potentially revising fisheries allocations. Specifically, once an allocation review trigger has been met, NMFS policy calls for an allocation review, after which the councils may maintain existing allocations or evaluate allocation options through a fishery management plan amendment. NMFS guidance states that the councils should develop a structured and transparent process for conducting allocation reviews, including consideration of current council priorities, other actions under deliberation, and available resources.

In April 2019, the Gulf of Mexico council began taking steps to develop an allocation review process, according to council documents. Specifically, the Gulf of Mexico council convened an allocation review workgroup consisting of staff from the council and from NMFS' Southeast Regional Office and Southeast Fisheries Science Center. The council expects the workgroup to propose draft allocation review procedures, including identifying data sources that would be needed to conduct allocation reviews, according to a council document. The workgroup met in June and July 2019 and discussed these topics and other potential proposals, such as establishing a tiered system for allocation reviews that would involve different levels of analysis for different tiers of reviews, according to council documents. Council staff said the workgroup plans to next meet after the issuance of our report to finalize a proposal for developing an allocation review process for the council to consider. However, the council has not indicated what actions it will take, if any, regarding the workgroup's proposal; instead, the council will determine its course of action after reviewing this report, according to council staff.

The South Atlantic council postponed discussion of defining or documenting its allocation review process until March 2020, according to council staff and members, to review our report before deciding any next steps. At the council's June 2019 meeting, the council chair questioned the need for developing an allocation review process through policy. For instance, the chair cited concerns that the council may be continuously developing exceptions to such a policy to accommodate fishery-specific issues or other unique circumstances. The chair also stated that aside from establishing criteria for initiating allocation reviews, NMFS' guidance does not require the councils to take other actions related to developing allocation review processes.

NMFS officials said that the agency's 2016 guidance recommending that the councils develop a structured and transparent process was not intended to require the councils to develop a separate policy or documented process for conducting allocation reviews. NMFS officials said that the agency's operational guidelines for processes under the Magnuson-Stevens Act and associated regional operating agreements with the councils lay out the key requirements and processes guiding development, review, and implementation of fishery management plans and plan amendments, which would include actions related to allocations.[83] The officials further explained that in developing the 2016 allocation policy, they intended that allocation reviews be conducted through the processes identified in the agency's operational guidelines and regional operating agreements with the councils, which allow the councils flexibility to factor in their own needs.

However, the operational guidelines and regional operating agreements for the South Atlantic and Gulf of Mexico councils apply to the fishery management plan and amendment process overall, and they do not specifically address allocations. The goals of the operational guidelines include promoting a timely, effective, and transparent public process for development and implementation of fishery management measures, and the guidelines note that the regional operating agreements are meant to make council procedures and processes transparent. The guidelines and agreements, however, do not lay out processes the councils are to follow in reviewing allocations apart from developing fishery management plans or plan amendments. As noted in NMFS' 2016 policy and guidance, the councils may conduct allocation reviews separate from the fishery management plan amendment process. Moreover, the regional operating agreements are not intended to limit or prevent the councils' use of additional processes in response to specific management needs, according to these documents and the operational guidelines, and the Gulf of Mexico council has taken initial steps in developing an allocation review process as previously described.

Based on the framework for internal controls established by the Committee of Sponsoring Organizations of the Treadway Commission, documented policies and processes can be more difficult to circumvent, less costly to an organization if there is turnover in personnel, and

[83]National Marine Fisheries Service, *Operational Guidelines*; South Atlantic Fishery Management Council, *Operating Agreement*; and Gulf of Mexico Fishery Management Council, *Regional Operating Agreement.*

increase accountability.[84] The framework also states that when subject to external party review, policies and processes would be expected to be formally documented. Among other things, documented processes—according to the framework—promote consistency; assist in communicating the who, what, when, where, and why of internal control execution; enable proper monitoring; and provide a means to retain organizational knowledge and mitigate the risk of having the knowledge within the minds of a limited number of individuals.

The 2012 report commissioned by NMFS to review fisheries allocation issues found that allocation reviews had not been done in a regular, consistent manner and stated that this makes it harder for stakeholders to understand the reviews as well as the process for conducting them.[85] Similarly, stakeholders we interviewed indicated that a clear process for conducting allocation reviews is needed and would increase their confidence in or understanding of the councils' decisions, regardless of specific outcomes.[86] Other stakeholders stressed the need for predictability and certainty to be able to plan critical business decisions, such as securing loans from local banks or other lenders. Such uncertainty may cause participants in the commercial sector to leave the fishery because they cannot secure loans or meet other business requirements, according to one stakeholder, or it may create instability that could affect the market price of fish, according to another stakeholder. By working with the councils to develop documented allocation review processes, NMFS would have better assurance that the councils carry out their upcoming allocation reviews in a structured and transparent manner, consistent with the agency's 2016 guidance.

Further, it is unclear whether or how the councils plan to document each allocation review, such as the basis for their allocation decisions, whether fishery management plan objectives are being met, and what factors were

[84]Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control-Integrated Framework*.

[85]Lapointe, *Marine Fishery Allocation Issues*.

[86]These stakeholder views are consistent with our past work on effective stakeholder participation in fisheries management, in which we found that using a clearly defined decision-making process helps provide transparency and gives stakeholders clear expectations about how decisions will be made, enhancing understanding and trust in the organization's decisions. See GAO, *Fisheries Management: Core Principles and a Strategic Approach Would Enhance Stakeholder Participation in Developing Quota-Based Programs*, GAO-06-289 (Washington, D.C.: Feb. 23, 2006).

considered in each review.[87] NMFS' operational guidelines state that fishery management decisions must be supported by a record providing the basis for the decision. In addition, NMFS' 2016 policy and guidance call for the councils to clearly articulate in their allocation reviews how fishery management plan objectives are or are not being met, as well as to document their rationale for determining whether any factors are unimportant or not applicable in making an allocation decision.

NMFS officials and council staff said that any allocation revisions would be documented through fishery management plan amendments. However, the councils may conduct allocation reviews separate from the fishery management plan amendment process, and it is not clear whether or how the councils will document those reviews. For example, as previously noted, in the past the South Atlantic council has not formally documented the results of allocation reviews that did not lead to fishery management plan amendments that revised the allocations. By working with the councils to specify how they plan to document their allocation reviews, NMFS could help ensure that the councils provide a clear record of the basis for their decisions, whether fishery management plan objectives are being met, and applicable factors considered. Clear records could also help increase transparency and stakeholder understanding of the councils' decisions, particularly in those instances when reviews are separate from the fishery management plan amendment process.

Conclusions

Making allocation decisions between the commercial and recreational fishing sectors can be complex and difficult, and the outcomes of those decisions may have important economic and social implications for stakeholders in each of the sectors. The South Atlantic and Gulf of Mexico councils have taken an important step in developing policies outlining criteria for initiating allocation reviews, in accordance with NMFS guidance. The Gulf of Mexico council has also taken initial steps to define how it will conduct its allocation reviews. However, neither council has developed a process for how they will conduct such reviews. By working with the councils to develop documented allocation review processes, NMFS would have better assurance that the councils carry out their

[87]According to South Atlantic council staff, the council has begun using a spreadsheet to track allocation discussions and plans to develop an electronic tracking system. The spreadsheet tracks allocation percentages and dates of associated fishery management plan amendments, and it will capture future discussions of potential allocation revisions, according to council staff. However, the spreadsheet does not contain information on the basis for the council's decisions, whether fishery management plan objectives are being met, and what factors were considered in reviewing the allocations.

upcoming allocation reviews in a structured and transparent manner, consistent with the agency's 2016 guidance. Moreover, by working with the councils to also specify how they plan to document their allocation reviews, NMFS could help ensure that the councils provide a clear record of the basis for their decisions, whether fishery management plan objectives are being met, and applicable factors considered.

Recommendations for Executive Action

We are making the following two recommendations to the NMFS Assistant Administrator for Fisheries:

The NMFS Assistant Administrator for Fisheries should work with the South Atlantic and Gulf of Mexico councils, and other councils as appropriate, to develop documented processes for conducting allocation reviews. (Recommendation 1)

The NMFS Assistant Administrator for Fisheries should work with the South Atlantic and Gulf of Mexico councils, and other councils as appropriate, to specify how the councils will document their allocation reviews, including the basis for their allocation decisions, whether fishery management plan objectives are being met, and what factors were considered in the reviews. (Recommendation 2)

Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Commerce for review and comment. In written comments (reproduced in app. II), Commerce and NOAA agreed with our recommendations and stated that NOAA's NMFS will work to implement them to the extent possible. NOAA stated that the report accurately describes the extent to which the councils established and revised allocations for mixed-use fisheries, the key sources of information that may be available for reviewing allocations, and the extent to which the councils have developed processes to help guide such reviews. NOAA also highlighted the delicate balance that councils seek to achieve in deciding what fishery management approaches to implement to comply with the Magnuson-Stevens Act and its 10 national standards.

In addition, Commerce and NOAA stated that NMFS does not have the legal authority to direct the councils to take the actions included in our two recommendations, stating that such actions are outside of legal requirements that guide council fishery management actions. In response, we revised the wording of our two recommendations to state that the NMFS Assistant Administrator for Fisheries should "work with," rather than "direct," the councils to take the recommended actions.

In response to our first recommendation, NOAA stated that it would build on the recommendations in its allocation policy by working with the South Atlantic and Gulf of Mexico councils, and other councils as appropriate, to develop documented processes for conducting allocation reviews. In response to our second recommendation on specifying how the councils will document their allocation reviews, NOAA stated that it will work with the councils on consistent documentation of allocation reviews. NOAA noted that transparency in the allocation process improves with a documented process for conducting allocation reviews, and that consistent documentation of those reviews will create further transparency in the allocation process and could improve stakeholders' understanding of the councils' decisions. NOAA also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Commerce, and other interested parties. In addition, the report is available at no charge on the GAO website at https://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or fennella@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

Anne-Marie Fennell
Director, Natural Resources and Environment

Appendix I: Mixed-Use Fisheries Allocations in the South Atlantic and Gulf of Mexico Fishery Management Council Regions

Tables 6 and 7 provide information on mixed-use fisheries allocations—privileges for catching fish between the commercial and recreational fishing sectors—in the South Atlantic and Gulf of Mexico Fishery Management Council (council) regions, respectively.[1] Not all mixed-use fish stocks in these regions have allocations. In the South Atlantic council region, spiny lobster does not have an allocation.[2] In the Gulf of Mexico council region, 14 of 23 mixed-use fish stocks do not have allocations.[3]

[1]The National Marine Fisheries Service (NMFS) defines an allocation of fishing privileges as a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. 50 C.F.R. § 600.325(c)(1). In our report, we consider for-hire fishing (both charter fishing and head boats) to be part of the recreational fishing sector because the South Atlantic and Gulf of Mexico councils generally manage for-hire fishing as part of the recreational sector, according to council staff. A fishery refers to one or more fish stocks that can be treated as a unit for conservation and management purposes and that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics. A fish stock refers to a species, subspecies, geographical grouping, or other category of fish capable of management as a unit. A fish stock may be one species or a complex of comparable species.

[2]South Atlantic council staff said spiny lobster does not have an allocation because fishing primarily occurs in the waters off Florida, where the state takes the lead in regulating this fishery through a protocol developed with NMFS and the South Atlantic and Gulf of Mexico councils. Outside of these Florida state-managed waters, spiny lobster fishing is subject to a two lobsters-per-person, per-trip catch limit, according to a council document.

[3]Specifically, the Gulf of Mexico council has not established allocations for the following mixed-use fish stocks: (1) cobia; (2) corals; (3) cubera, (4) gray, (5) lane, (6) mutton, (7) vermillion, and (8) yellowtail snapper; (9) goliath grouper; (10) hogfish; (11) Spanish mackerel; (12) spiny lobster; (13) the Jacks complex (almaco jack, banded rudderfish, and lesser amberjack); and (14) the mid-water snapper complex (blackfin snapper, queen snapper, silk snapper, and wenchman).

Table 6: Mixed-Use Fish Stock Allocations in the South Atlantic Fishery Management Council Region, as of December 2019

	Initial allocations			Revised allocations		
Fish stock	**Year**	**Commercial (percent)**	**Recreational (percent)**	**Year**	**Commercial (percent)**	**Recreational (percent)**
Atlantic spadefish	2011	12.90	87.10	2012	18.53	81.47
Bar jack	2011	32.58	67.42	2012	21.25	78.75
Black grouper[a]	2011	36.88	63.12	—	—	—
Black sea bass	2006	43.00	57.00	—	—	—
Blueline tilefish	2011	47.39	52.61	2012	50.07	49.93
Cobia, Gulf group, Florida East Coast Zone	2014	8.00	92.00	—	—	—
Dolphin (mahimahi)	2003	13.00	87.00	2011 2013 2015	7.30 7.54 10.00	92.70 92.46 90.00
Gag grouper	2008	51.00	49.00	—	—	—
Golden tilefish	2010	97.00	3.00	—	—	—
Gray triggerfish	2011	45.39	54.61	2012	43.56	56.44
Greater amberjack	2011	40.66	59.34	—	—	—
Hogfish[b]	2011	33.03	66.97	2012 2016[c] 2016[d]	36.69 69.13[c] 9.63[d]	63.31 30.87[c] 90.37[d]
King mackerel, Atlantic group	1985	37.10	62.90	—	—	—
Mutton snapper	2011	17.02	82.98	—	—	—
Red grouper	2011	44.00	56.00	—	—	—
Red porgy	2008	50.00	50.00	—	—	—
Red snapper	2011	28.07	71.93	—	—	—
Scamp	2011	69.36	30.64	2012	65.34	34.66
Snowy grouper	2008	95.00	5.00	2014	83.00	17.00
Spanish mackerel, Atlantic group	1987	76.00	24.00	1989 1998	50.00 55.00	50.00 45.00
Speckled hind[e]	2011	65.59	34.41	—	—	—
Vermilion snapper	2008	68.00	32.00	—	—	—
Wahoo	2011	4.30	95.70	2013	3.93	96.07
Warsaw grouper[e]	2011	17.79	82.21	—	—	—
Wreckfish	2011	95.00	5.00	—	—	—

	Initial allocations			Revised allocations		
Fish stock	**Year**	**Commercial (percent)**	**Recreational (percent)**	**Year**	**Commercial (percent)**	**Recreational (percent)**
Yellowtail snapper	2011	52.56	47.44	—	—	—
Fish stocks managed as part of a complex						
Deepwater complex						
Blackfin snapper	2011	31.68	68.32	2012	29.91	70.09
Misty grouper	2011	70.91	29.09	2012	83.42	16.58
Queen snapper	2011	93.12	6.88	2012	92.50	7.50
Sand tilefish	2011	16.22	83.78	2012	22.17	77.83
Silk snapper	2011	73.14	26.86	2012	73.95	26.05
Yellowedge grouper	2011	96.19	3.81	2012	90.77	9.23
Grunts complex						
Margate	2011	19.83	80.17	2012	18.88	81.12
White grunt	2011	32.67	67.33	2012	31.59	68.41
Jacks complex						
Almaco jack	2011	51.53	48.47	2012	48.70	51.30
Banded rudderfish	2011	25.25	74.75	2012	26.01	73.99
Lesser amberjack	2011	46.62	53.38	2012	46.07	53.93
Porgy complex						
Jolthead porgy	2011	4.05	95.95	2012	4.15	95.85
Knobbed porgy	2011	54.12	45.88	2012	51.18	48.82
Saucereye porgy[f]	2011	0.01	99.99	2012	0.01	99.99
Whitebone porgy	2011	0.96	99.04	2012	1.05	98.95
Shallow-water groupers complex						
Coney	2011	23.26	76.74	2012	24.45	75.55
Graysby	2011	14.48	85.52	2012	15.74	84.26
Red hind	2011	73.28	26.72	2012	73.60	26.40
Rock hind	2011	62.54	37.46	2012	60.90	39.10
Yellowfin grouper	2011	40.78	59.22	2012	52.70	47.30
Yellowmouth grouper	2011	1.35	98.65	2012	1.10	98.90
Snappers complex						
Cubera snapper	2011	19.75	80.25	2012	19.57	80.43
Gray snapper	2011	20.00	80.00	2012	24.23	75.77
Lane snapper	2011	12.21	87.79	2012	14.75	85.25

Legend: — = not applicable

Source: GAO analysis of South Atlantic Fishery Management Council documents and information from council staff. | GAO-20-216

Note: This table includes fish stocks that have allocations between the commercial and recreational fishing sectors. Fish stocks listed by complex are managed together as a group. For this report, we count a complex as a single fish stock if the allocation is for the stock complex, rather than for the

individual stock within the complex. If the fish stocks within a complex each have their own allocations, we count them as separate fish stocks for reporting purposes. The years shown represent the year the council completed a fishery management plan amendment and sent it to the National Marine Fisheries Service (NMFS) for review and approval. The South Atlantic Fishery Management Council has set allocation percentages to two decimal places, as indicated in this table.

[a]Prior to the initial allocations shown in this table, NMFS and the South Atlantic Fishery Management Council managed black grouper, red grouper, and gag grouper as a complex, including establishing one combined allocation for the three fish stocks.

[b]In 2016, the South Atlantic Fishery Management Council split the South Atlantic hogfish fish stock into two and established allocations for Georgia-North Carolina hogfish and Florida Keys/East Coast of Florida hogfish.

[c]Allocation shown is for the Georgia-North Carolina hogfish stock.

[d]Allocation shown is for the Florida Keys/East Coast of Florida hogfish stock.

[e]Harvest is not allowed for speckled hind and warsaw grouper as of December 2019.

[f]Saucereye porgy in the South Atlantic is, in practice, a recreational fish stock, according to South Atlantic Fishery Management Council staff. Council staff indicated that because the total annual catch limit for the fish stock is low, there is no commercial fishing in practice for the stock.

Table 7: Mixed-Use Fish Stock Allocations in the Gulf of Mexico Fishery Management Council Region, as of December 2019

	Initial allocations			Revised allocations		
Fish stock	**Year**	**Commercial (percent)**	**Fish stock**	**Year**	**Commercial (percent)**	**Fish stock**
Gag grouper	1989	35	65	2008	39	61
Gray triggerfish	2008	21	79	—	—	—
Greater amberjack	1989	16	84	2008[a]	27[a]	73[a]
King mackerel, Gulf group	1985	32	68	—	—	—
Red grouper	1989	77	23	2008	76	24
Red snapper[b]	1989	51	49	[c]	[c]	[c]
Fish stocks managed as part of a complex[d]						
Deep water grouper aggregate complex (snowy grouper, speckled hind, warsaw grouper, and yellowedge grouper)	2011	96.4	3.6	—	—	—
Shallow water grouper aggregate complex (black grouper, scamp, yellowfin grouper, and yellowmouth grouper)	2011	77.0	23.0	—	—	—
Tilefish aggregate complex (blueline tilefish, golden tilefish, and goldface tilefish)	2011	99.7	0.3	—	—	—

Legend: — = not applicable

Source: GAO analysis of Gulf of Mexico Fishery Management Council documents and information from council staff and National Marine Fisheries Service (NMFS) officials. | GAO-20-216

Note: This table includes fish stocks that have allocations between the commercial and recreational fishing sectors. Fish stocks listed by complex are managed together as a group. For this report, we count a complex as a single fish stock if the allocation is for the stock complex, rather than for the individual stock within the complex. If the fish stocks within a complex each have their own

allocations, we count them as separate fish stocks for reporting purposes. The years shown represent the year the council completed a fishery management plan amendment and sent it to the National Marine Fisheries Service for review and approval.

[a]For greater amberjack, the council did not revise the allocation directly; instead, the council indirectly revised the commercial and recreational allocations by establishing harvest reductions that were applied unequally to these fishing sectors, according to a 2008 fishery management plan amendment.

[b]In addition, in 2014 the Gulf of Mexico Fishery Management Council finalized a fishery management plan amendment that established an allocation between the private angling and for-hire components of the recreational allocation for red snapper. This resulted in a private angling allocation of 57.7 percent of the recreational allocation and a for-hire fishing allocation of 42.3 percent of the recreational allocation.

[c]In 2015, the Gulf of Mexico Fishery Management Council completed a fishery management plan amendment that revised the red snapper allocation to 48.5 percent commercial and 51.5 percent recreational. However, after the Secretary of Commerce approved the amendment in 2016, a U.S. District Court vacated the amendment in 2017 and the council returned to the initial allocation established for red snapper. *See Guindon v. Pritzker*, 240 F. Supp. 3d 181 (D.D.C. 2017).

[d]Fish stocks managed as part of a complex in the Gulf of Mexico do not have individual allocation percentages for each fish stock. Instead, the Gulf of Mexico Fishery Management Council established allocation percentages for each complex as a whole, based on quotas for commercial fishing established for these complexes. Recreational allocation percentages for the complexes represent the remainder of allowable harvest, after factoring in quota amounts, according to NMFS officials. Allocation percentages for these complexes are presented to one decimal point to reflect percentages provided by the Gulf of Mexico Fishery Management Council.

Appendix II: Comments from the Department of Commerce

UNITED STATES DEPARTMENT OF COMMERCE
The Secretary of Commerce
Washington, D.C. 20230

March 17, 2020

Ms. Anne-Marie Fennell
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Fennell:

Thank you for the opportunity to review and comment on the Government Accountability Office's (GAO) draft report *Mixed-Use Fisheries: South Atlantic and Gulf of Mexico Councils Would Benefit from Documented Processes for Allocation Reviews* (GAO-20-216).

The Department of Commerce agrees with GAO's two recommendations regarding the National Oceanic and Atmospheric Administration (NOAA) and will work to implement them to the extent possible. Specifically, NOAA's National Marine Fisheries Service (NMFS) will work with the fishery management councils on these recommendations; however, neither the Department nor NMFS has the authority to direct councils to take action. Enclosed is our response and recommended technical changes to the draft report.

If you have any further questions, please contact MaryAnn Mausser, GAO Liaison, at (202) 482-8120 or mmausser@doc.gov.

Sincerely,

Wilbur Ross

Wilbur Ross

Enclosure

Department of Commerce
National Oceanic and Atmospheric Administration
Response to the GAO Draft Report Entitled
Mixed-Use Fisheries: South Atlantic and Gulf of Mexico Councils Would Benefit from Documented Processes for Allocation Reviews
(GAO-20-216, March 2020)

General Comments

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) appreciates the opportunity to review the Government Accountability Office's (GAO) report. GAO does a thorough job in reviewing allocations for mixed-use fisheries in the South Atlantic and Gulf of Mexico. The report accurately describes the extent to which the fishery management councils (councils) established and revised allocations to mixed-use fisheries, the key sources of information that may be available for reviewing allocations, and the extent to which the councils have developed processes to help guide such reviews.

We appreciate the report's acknowledgment of the National Marine Fisheries Service's (NMFS) 2016 Allocation Policy, which required councils to identify allocation triggers for all fisheries with an allocation, including allocations to mixed-use fisheries. The recommendations from this report (see below) reiterate the importance of this policy and request documentation of the process and results consistent with the policy. We also appreciate the report's discussion of the various data challenges, in particular for economic analyses, as well as acknowledgment of NMFS efforts to address these challenges such as our upcoming best practices manual on conducting economic analyses for use in allocation decisions.

We would like to highlight the delicate balance that councils seek to achieve in deciding what fishery management approaches to implement so that there is compliance with all ten national standards and other Magnuson-Stevens Fishery Conservation and Management Act (MSA) requirements. When considering the different means by which the conservation goals of the MSA can be achieved, the councils can consider the potential trade-offs between the national standards. For example, maintaining employment may be in conflict with improving economic efficiency. Similarly, long-term goals related to rebuilding stocks may also be in conflict with short-term goals of minimizing impacts on fishery-dependent communities. Updated and measurable objectives help clarify decisions about these trade-offs within and between fishery management plans (FMP).

NOAA Response to GAO Recommendations

The draft GAO report made two recommendations:

Recommendation 1: "The NMFS Assistant Administrator for Fisheries should direct the South Atlantic and Gulf of Mexico councils, and other councils as appropriate, to develop documented processes for conducting allocation reviews."

NOAA Response: Building on recommendations in the Allocation Policy, we will work with the South Atlantic and Gulf of Mexico Councils, and other councils as appropriate, to develop

documented processes for conducting allocation reviews. However, NOAA lacks authority to "direct" the council to take such action as it is outside of legal requirements that guide council fishery management actions. We suggest that GAO reword the recommendation to say, "The NMFS Assistant Administrator for Fisheries should work with…" instead of "should direct."

Note that a fishery allocation review is the initial evaluation that leads to the decision of whether or not to maintain current allocations or develop alternative allocation options, as described in the Allocation Policy. It does not require in-depth data and analyses and is not, in and of itself, an implicit trigger to consider alternative allocations. Because they may or may not lead to a fishery management action, these initial reviews are not currently documented in a consistent way and could benefit from established or documented processes. If following an initial allocation review, a council proceeds with a formal analysis to consider alternative allocations, this would occur through the fishery management plan process. These processes are well established and documented through the agency's Operational Guidelines and associated Regional Operating Agreements.

Transparency in the allocation process improves with a documented process for conducting allocation reviews. NOAA looks forward to working with the councils in implementing these recommendations.

Recommendation 2: "The NMFS Assistant Administrator for Fisheries should direct the South Atlantic and Gulf of Mexico councils, and other councils as appropriate, to specify how the councils will document their allocation reviews, including the basis for their allocation decisions, whether fishery management plan objectives are being met, and what factors were considered in the reviews."

NOAA Response: We will work with the South Atlantic and Gulf of Mexico Councils, and other councils as appropriate, on consistent documentation of allocation reviews. However, NOAA lacks authority to "direct" the council to take such action as it is outside of legal requirements that guide council fishery management actions. We suggest that GAO reword the recommendation to say, "The NMFS Assistant Administrator for Fisheries should work with…" instead of "should direct."

Consistent documentation of allocation reviews, including timing, factors considered, summaries of how the fishery is or is not meeting its objectives, and the basis of final decisions to keep status quo or proceed to the FMP amendment process will create further transparency in the allocation process. Clear records could also improve stakeholder understanding of the councils' decisions, particularly in those instances when reviews do not result in pursuit of alternative allocations through the FMP amendment process. NOAA looks forward to working with the councils in implementing these recommendations.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Anne-Marie Fennell, (202) 512-3841 or fennella@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Alyssa M. Hundrup (Assistant Director), Krista Breen Anderson (Analyst in Charge), Leo Acosta, Mark Braza, Tim Guinane, Paul Kazemersky, Patricia Moye, Cynthia Norris, Dan C. Royer, Rebecca Sandulli, Kiki Theodoropoulos, and Khristi Wilkins made key contributions to this report.

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