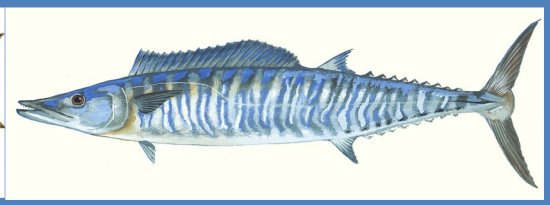

Amendment 12 to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic

Add Bullet Mackerel and Frigate Mackerel as Ecosystem Component Species

Regulatory Impact Review | Regulatory Flexibility Analysis | Fishery Impact Statement

December 2, 2020

A publication of the South Atlantic Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA10NMF4410012

Abbreviations and Acronyms Used in the FMP Document

AP	advisory panel
BSIA	best scientific information available
DPS	distinct population segment
EC	Ecosystem Component
E.O.	Executive Order
FES	Fishing Effort Survey
FIS	Fishery Impact Statement
FMP	Fishery Management Plan
LBS WW	Pounds Whole Weight
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
RFA	Regulatory Flexibility Act
RIR	regulatory impact review
SAFMC	South Atlantic Fishery Management Council
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SSC	Scientific and Statistical Committee

Amendment 12 to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic

Proposed action(s):	Add bullet mackerel and frigate mackerel to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic and designate them as ecosystem component species
Lead agency:	Amendment – South Atlantic Fishery Management Council Categorical Exclusion – National Marine Fisheries Service (NMFS), Southeast Regional Office
For Further Information Contact:	John Hadley South Atlantic Fishery Management Council 4055 Faber Place, Suite 201 North Charleston, SC 29405 843-302-8432 866-SAFMC-10 John.Hadley@safmc.net Nikhil Mehta NMFS, Southeast Region 263 13th Avenue South St. Petersburg, FL 33701 727-551-5098 Nikhil.Mehta@noaa.gov

Table of Contents

List of Tables

Chapter 1. Introduction

1.1 What Action is Being Proposed?

Amendment 12 to the Fishery Management Plan (FMP) for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo FMP) proposes to add bullet mackerel (*Auxis rochei*) and frigate mackerel (*Auxis thazard*) to the Dolphin Wahoo FMP and designate them as ecosystem component (EC) species.

1.1.1 Options

Option 1 (Status Quo). There are no ecosystem component species in the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic.

Preferred Option 2. Add bullet mackerel and frigate mackerel to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic and designate the two mackerel species as ecosystem component species.

Management Agencies

- ***South Atlantic Fishery Management Council*** – Engages in a process to determine a range of actions and alternatives and recommends action to the National Marine Fisheries Service.
- ***National Marine Fisheries Service*** and ***Council staffs*** – Develops alternatives based on guidance from the Council and analyzes the environmental impacts of those alternatives. If approved by the Secretary of Commerce, NMFS implements the action through rulemaking.

1.2 Why is the South Atlantic Council Considering Action?

In March 2018, the Mid-Atlantic Fishery Management Council (Mid-Atlantic Council) requested that the South Atlantic Council consider managing bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP to protect them as forage fish for managed stocks and prevent these species from being targeted. Recent research on forage ecology of large pelagic fish in the U.S. South Atlantic have shown that bullet mackerel and frigate mackerel are key prey for species such as wahoo (*Acanthocybium solandri*), blue marlin (*Makaira nigricans*), and yellowfin tuna (*Thunnus albacares*) (Rudershausen et al. 2010; Poland et al. 2019). Bullet mackerel and frigate mackerel have also been noted to a lesser extent in the diets of dolphin (*Coryphaena hippurus*) (Rudershausen et al. 2010; Poland, S. J. 2014). On June 19, 2017, the National Marine Fisheries Service (NMFS) disapproved inclusion of bullet mackerel and frigate mackerel in the Mid-Atlantic Council's Unmanaged Forage Omnibus Amendment (http://www.mafmc.org/actions/unmanaged-forage), citing concerns over inconsistency with National Standard 2 and an insufficient connection to that Council's FMPs. However, wahoo is managed by the South Atlantic Council under the Dolphin Wahoo FMP. At the December 2018 meeting, the Dolphin Wahoo Committee of the South Atlantic Council received a presentation on the presence of the two mackerel species in the diets of dolphin and wahoo and discussed the

request from the Mid-Atlantic Council to designate bullet and frigate mackerel as EC species in the Dolphin Wahoo FMP. The Dolphin Wahoo Committee decided to further investigate the topic and have a more in-depth discussion on the potential for adding bullet mackerel, frigate mackerel, and possibly other prey species as ecosystem components at the March 2019 meeting.

At the March 2019 meeting, the Dolphin Wahoo Committee discussed a white paper on mechanisms and regulatory parameters for adding EC species to a FMP, ways that other Councils have addressed EC species in their FMPs, as well as background information on fisheries for bullet mackerel and frigate mackerel. The South Atlantic Council scoped the topic of adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species in the spring of 2019, and received public comment in favor of the topic. An interdisciplinary planning team including NMFS and South Atlantic Council staff considered the ten factors listed in the National Standard Guidelines at 50 C.F.R §600.305(c)(1), and determined bullet mackerel and frigate mackerel were not in need of conservation and management in the South Atlantic Region, and thus had the potential to be designated as EC species (Appendix A). An options paper for Amendment 12 to the Dolphin Wahoo FMP (Dolphin Wahoo Amendment 12) was presented to the South Atlantic Council at the September 2019 meeting, during which the South Atlantic Council approved the action considered in the amendment, and requested guidance from NMFS on the South Atlantic Council's ability to add EC species to an FMP and implement relevant regulatory measures. On February 7, 2020, NMFS responded that the South Atlantic Council could designate bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP (NMFS 2020). At the March 2020 meeting, the South Atlantic Council voted to select a preferred option that would add bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP and designate the two mackerel species as EC species via Dolphin Wahoo Amendment 12.

1.3 Effects of the Action

Purpose and Need

The *purpose* and *need* is to add bullet mackerel and frigate mackerel to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic as ecosystem component (EC) species to acknowledge their ecological role as forage fish.

1.3.1 Biological Effects

Bullet mackerel and frigate mackerel can be EC species because they do not require conservation and management in the South Atlantic Region (Appendix A), but the South Atlantic Council decided to list them in the Dolphin Wahoo FMP to achieve ecosystem management objectives (50 CFR 600.305(d)(13)). The EC designation recognizes the ecosystem role of these mackerel species as prey for wahoo. Poland et al. (2019) found scombrids (mainly *Auxis* sp.) as the dominant prey (43.7% frequency of occurrence and 41.7% by mass) in wahoo diets, showing a high reliance on scombrids and suggesting that wahoo specialize on this prey group similar to other regions throughout their range (Vaske et al. 2003; Rudershausen et al. 2010; Poland, S. J. 2014; Perelman et al. 2017). Bullet mackerel can reach about 20 inches in length and resemble frigate mackerel. They feed on a variety of prey, especially clupeoids (i.e. herrings and

sardines), crustaceans, and squids (Collette and Klein-MacPhee 2002; Froese and Pauly 2016). Bullet mackerel are found nearly worldwide in warm waters. In the western Atlantic, they are found from Cape Cod to the Gulf of Mexico and often form schools (Collette and Klein-MacPhee 2002; Froese and Pauly 2016). Frigate mackerel can reach two feet in length and exhibit schooling behavior as well. Frigate mackerel feed on a variety of fish, squids, and small crustaceans. In the western North Atlantic, frigate mackerel are mostly found from North Carolina to Florida (Kells and Carpenter 2011, Froese and Pauly 2016). Biological benefits from this administrative action could be attained from the raised awareness among the fishers, fishing communities, data collecting agencies, and regulatory entities managing dolphin, wahoo, bullet mackerel, and frigate mackerel.

According to data provided by a query of the landings database for the Atlantic Coast Cooperative Statistics Program (ACCSP), commercial landings of bullet and frigate mackerel over the past 20 years (1999 to 2018) were reported only from the Mid-Atlantic and New England regions, with the exception of 2018 when relatively minor landings of frigate mackerel were reported from the South Atlantic Region. Over this same 20-year time period, there were no reported commercial landings of bullet mackerel from the Atlantic other than in 2018. Bullet mackerel and frigate mackerel are similar in appearance and it is possible that some landings of bullet mackerel may have been misidentified as frigate mackerel. Additionally, federal observer data in the Mid-Atlantic Region have included records of small amounts of bullet mackerel caught in bottom trawl tows, which resulted in landings of longfin squid, black sea bass, and summer flounder, indicating that the species are caught in some commercial fishing operations as bycatch.

Commercial landings of bullet mackerel and frigate mackerel have been variable but typically are relatively low, averaging 4,395 pounds whole weight (lb ww) annually over the past 20 years of available data (1999 through 2018), 1,569 lb ww annually over the past 10 years (2009 through 2018), and 1,939 lb ww over the past five years (2014 through 2018) (**Table 1.3.1**) for the entire U.S. Atlantic. Based on the relatively low annual landings in most years, it appears that bullet mackerel and frigate mackerel are typically caught incidentally to other species. Dolphin Wahoo Amendment 12 does not include any management measures that would encourage any targeted harvest of bullet mackerel or frigate mackerel and therefore, bycatch and discard levels are not expected to increase over current levels, which are very small as discussed above.

Table 1.3.1. Commercial landings for bullet mackerel and frigate mackerel landed from the U.S. Atlantic Ocean, 1999-2018.

Year	Landings (lb ww)
1999	36,472
2000	19,682
2001	6,343
2002	1,714
2003	4,013
2004	*
2005	*
2006	0
2007	*
2008	*
2009	*
2010	*
2011	3,467
2012	457
2013	*
2014	5,674
2015	*
2016	894
2017	*
2018	*
20-year average	4,395
10-year average	1,569
5-year average	1,939

* denotes confidential data.
Source: ACCSP Commercial Landings Query. Accessed March 29, 2020.

Recreational landings have been variable and sporadic, averaging 1,189 lb ww for bullet mackerel, 3,569 lb ww for frigate mackerel, and 4,759 lb ww for both species combined annually over the past 20 years of available data (1999 through 2018) (**Table 1.3.2**). Recreational catches of bullet mackerel and frigate mackerel have largely occurred in the South Atlantic Region, with some limited catches reported from the Mid-Atlantic Region. Based on the relatively low level of annual landings, it appears that bullet mackerel and frigate mackerel are typically caught incidentally to fishing for other species. Recreational fishermen have also noted that these species are used as bait. In most circumstances, the catch estimates are accompanied by a relatively high percent standard error (PSE), which is likely reflective of relatively few intercepts.

Table 1.3.2. Recreational landings of bullet mackerel and frigate mackerel from the U.S. Atlantic Ocean, 1999-2018.

Year	Bullet Mackerel Landings (lb ww)	PSE	Frigate Mackerel Landings (lb ww)	PSE	Combined Landings (lb ww)
1999	0	-	0	-	0
2000	0	-	0	-	0
2001	0	-	0	-	0
2002	0	-	0	-	0
2003	0	-	0	-	0
2004	0	-	0	-	0
2005	0	-	0	-	0
2006	0	-	0	-	0
2007	0	-	0	-	0
2008	0	-	0	-	0
2009	0	-	0	-	0
2010	0	-	322	86	322
2011	166	74.6	0	-	166
2012	296	99.5	51,856	101.3	52,152
2013	0	-	17,592	66.3	17,592
2014	786	50.5	0	-	786
2015	0	-	1,618	95.3	1,618
2016	11,467	31.5	0	-	11,467
2017	10,247	30.9	0	0	10,247
2018	825	44	0	0	825
20-year average	1,189	-	3,569	-	4,759
10-year average	2,379	-	7,139	-	9,518
5-year average	4,665	-	324	-	4,989

Source: ACCSP Recreational Landings Query based on MRIP data. Accessed March 31, 2020.

As shown in **Tables 1.3.1** and **1.3.2** above, landings of bullet mackerel and frigate mackerel are inconsequential. Furthermore, allowable gear in the dolphin wahoo fishery such as automatic reel, bandit gear, handline, pelagic longline, rod and reel, and spearfishing gear (including powerheads) do not harvest bullet mackerel and frigate mackerel. There are no gear modifications or management measures proposed in Dolphin Wahoo Amendment 12. No direct or indirect adverse impacts are expected from the EC species designation on species listed under the Endangered Species Act or Marine Mammal Protection Act including their critical habitat.

In terms of data collection, vessels with federal commercial dolphin wahoo permits already report all landings that are sold to a federally permitted dealer including species that are not federally managed. Beginning January 4, 2020, the final rule for the South Atlantic electronic for-hire program requires that federally permitted for-hire snapper-grouper, dolphin wahoo, and coastal migratory pelagic vessels in the Atlantic report all landings including species that are not subject to federal management. The Marine Recreational Information Program captures information on all species caught by recreational fishermen. Furthermore, North Carolina has introduced fish identification codes in its state trip ticket forms for these mackerel species since

2018. Public education and awareness of the EC designation may encourage reporting landings of these two mackerel species more than before, providing some biological benefits. If landings for bullet mackerel and frigate mackerel were to increase in the future, management measures within the South Atlantic Council's jurisdiction could be explored in a future amendment.

1.3.2 Economic Effects

The economic effects of this action are described in **Section 2.3** of **Chapter 2**.

1.3.3 Social Effects

Designating bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP, as proposed, is not anticipated to result in direct positive or negative social effects. Landings of bullet mackerel and frigate mackerel are minimal in the U.S. Atlantic Ocean (**Table 1.3.1** and **1.3.2**) and thus do not likely constitute an important component of commercial and for-hire businesses or private recreational fishing activity. Designating bullet mackerel and frigate mackerel as EC species may have indirect social benefits as it could foster timelier decisions making and ensure management is streamlined should management measures be deemed necessary in the future.

The South Atlantic Council received numerous comments from the public in support of designating bullet mackerel and frigate mackerel as EC species. Acknowledging the key role these mackerel species play in supporting an important commercial and recreational fishery would improve stakeholder perceptions of management efforts.

The overall social effects should be positive for both the recreational and commercial sectors as the EC designation recognizes the ecosystem role of these mackerel species as prey for wahoo while not requiring unnecessary management constraints for a species that is currently rarely encountered in the Atlantic.

1.4 South Atlantic Council's Choice for the Preferred Option

1.4.1 Dolphin Wahoo Advisory Panel (AP) Comments and Recommendations

The Dolphin Wahoo Advisory Panel (Dolphin Wahoo AP) met via webinar on August 22, 2019, and was provided information on the South Atlantic Council's consideration of adding bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP, including background information on the two mackerel species and options that the South Atlantic Council was initially considering in Dolphin Wahoo Amendment 12.

The Dolphin Wahoo AP expressed general support for designating bullet mackerel and frigate mackerel as EC species, with some members noting that in their experience wahoo particularly target the *Auxis* species as forage. The Dolphin Wahoo AP felt that the South Atlantic Council should consider a "conservative approach" that would help ensure there are not major increases in the harvest of bullet mackerel and frigate mackerel.

The Dolphin Wahoo AP made the following motions:

MOTION: RECOMMEND THAT THE SOUTH ATLANTIC COUNCIL DESIGNATE BULLET AND FRIGATE MACKEREL AS ECOSYSTEM COMPONENT SPECIES IN THE DOLPHIN WAHOO FMP. ALSO THE AP ENDORSES THAT THE SOUTH ATLANTIC COUNCIL PROACTIVELY PROTECTS THE SPECIES AS PREY.
APPROVED BY AP (6 IN FAVOR/0 OPPOSED/1 ABSTENTION)

MOTION: CONSIDER REGULATORY ACTIONS IN CONJUNCTION WITH ADDING BULLET AND FRIGATE MACKEREL AS ECOSYSTEM COMPONENT SPECIES.
APPROVED BY AP (6 IN FAVOR/0 OPPOSED/1 ABSTENTION)

1.4.2 Habitat Protection and Ecosystem-Based Management AP Comments and Recommendations

At the November 2018 meeting of the Habitat Protection and Ecosystem-Based Management AP (Habitat AP), presentations were made outlining the scientific data identifying the importance of frigate mackerel and bullet mackerel as forage for wahoo and dolphin. In keeping with renewed efforts by fisheries management entities to proactively address potential threats to currently unmanaged species in addition to the growing emphasis on developing ecosystem management approaches, the Habitat AP recommended that the South Atlantic Council begin monitoring landings of bullet mackerel and frigate mackerel.

This topic was revisited by the Habitat AP at the May 2019 meeting. At this meeting, the Habitat AP recommended that the South Atlantic Council take proactive actions for bullet mackerel and frigate mackerel due to sound existing science regarding their importance as prey for wahoo and dolphin. Additionally, the Habitat AP felt that a dedicated scientific study should target bullet mackerel and frigate mackerel in conjunction with other identified forage prey to enable the future development of comprehensive FMPs.

1.4.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

The South Atlantic Council's SSC was presented background information on Dolphin Wahoo Amendment 12 during their October 2019 meeting. The SSC discussed the amendment and recommended adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species.

1.4.4 Public Comments and Recommendations

Scoping for Dolphin Wahoo Amendment 12 was held in May 2019 to gather public comments on the concept of adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species. The South Atlantic Council received 117 comments during scoping. A summary of the scoping comments is as follows:

- Majority of comments expressed support for adding the bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species. Also general support for protecting forage species.
- Bullet mackerel and frigate mackerel are not only important forage for wahoo and dolphin, but also are forage for other large pelagic predators such as billfish and tunas. These large

pelagic predators support the offshore charter, private recreational, tournament, and commercial fisheries that are important economic components of many coastal communities.

- Bullet mackerel and frigate mackerel not only contribute to the stocks of wahoo, dolphin, and other large pelagic predatory species by maintaining the health of these stocks but also serve as a means to aggregate and maintain these predators in a general area so they are accessible to fishery participants.
- Protecting bullet mackerel and frigate mackerel is a concrete way that the South Atlantic Council can put policies from the Fishery Ecosystem Plan II into place.
- Adoption of bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP would be a proactive, preventative approach.
- There was some limited concern that the South Atlantic Council was creating or authorizing a new fishery for bullet mackerel and frigate mackerel. While this was not the case and the two species are currently unmanaged, this perception generally accounted for the relatively few comments provided in opposition to adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP.

Public hearings for Dolphin Wahoo Amendment 12 were held on September 16, 2020, via webinar during the public comment session at the South Atlantic Council's September 2020 meeting. The comment period was from August 28, 2020, through September 17, 2020. Three comments were received during public hearings, with one comment provided online and two provided verbally during the webinar hearing. All three comments were in favor of adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP. A summary of the scoping comments is as follows:

- Support was expressed for adding bullet mackerel and frigate mackerel species to the Dolphin Wahoo FMP as EC species. Also, there was general support for protecting forage species.
- Bullet mackerel and frigate mackerel are not only important forage for wahoo and dolphin, but also are forage for other large pelagic predators such as billfish and tunas.
- Bullet mackerel and frigate mackerel are important forage species in both the South Atlantic and Mid-Atlantic regions.

1.4.5 South Atlantic Council's Conclusion

The South Atlantic Council considered adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species in response to a request from the Mid-Atlantic Council. In doing so, the South Atlantic Council examined dietary information for dolphin and wahoo as well as regulatory measures that had been taken by the Mid Atlantic Council to address unmanaged forage species as EC species within their respective FMPs. Initially, the South Atlantic Council explored potential regulatory measures that could accompany incorporating bullet mackerel and frigate mackerel as EC species but did not pursue these regulatory measures after receiving guidance from NMFS and further considering the potential implications of such measures. The South Atlantic Council also received recommendations from their SSC, APs, and the public on measures related to bullet mackerel and frigate mackerel as EC species.

The South Atlantic Council concluded that **Preferred Option 2** best meets the purpose and need of the amendment to acknowledge the ecological role of bullet mackerel and frigate

mackerel as forage fish. The South Atlantic Council noted that bullet mackerel and frigate mackerel have been documented as important forage species particularly for wahoo and to a lesser extent for dolphin (Rudershausen et al. 2010; Poland, S. J. 2014; Poland et al. 2019). This action is supported by peer reviewed literature, recommendations from the South Atlantic Council's SSC, as well as Dolphin Wahoo AP and Habitat AP, and numerous public comments in favor of adding bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species. Furthermore, it has been noted that bullet mackerel and frigate mackerel are currently not in need of conservation and management, making them eligible for consideration as EC species under provisions found within the National Standard Guidelines and complying with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable law (**Appendix A**).

Chapter 2. Regulatory Impact Review

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest to satisfy our obligations under Executive Order (E.O.) 12866, as amended. In conjunction with the analysis of direct and indirect effects in the "Environmental Consequences" section of this amendment, the RIR: 1) provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way. The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in E.O. 12866. In addition, the RIR provides some information that may be used in conducting an analysis of the effects on small entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the effects that this regulatory action would be expected to have on the commercial and recreational sector of the fisheries for bullet mackerel and frigate mackerel in the South Atlantic Region.

2.1 Problems and Objectives

The problems and objectives for the proposed action are presented in **Section 1.2** of this amendment and are incorporated herein by reference.

2.2 Economic Description of the Fisheries

The Fishery Management Plan (FMP) for the Dolphin Wahoo Fishery of the Atlantic currently does not have ecosystem component (EC) species listed in the FMP. While the addition of bullet mackerel and frigate mackerel as EC species acknowledges the role of the two mackerels as important forage for wahoo, there are no associated management measures in this amendment that would alter the fisheries for or stocks of bullet mackerel or frigate mackerel. As such, there are no expected notable effects for the dolphin wahoo fishery that would result from this action, therefore the dolphin wahoo fishery is not described in this amendment. The existing fisheries for bullet mackerel and frigate mackerel are described in the following sections for the entire U.S. Atlantic.

2.2.1 Description for the Commercial Sector

Commercial landings of bullet mackerel and frigate mackerel have been variable but typically are relatively low, averaging 1,939 pounds whole weight (lb ww) over the past five years (2014 through 2018) (**Table 2.2.1**) for the entire U.S. Atlantic Ocean. These landings were reported only from the Mid-Atlantic and New England regions, except for 2018 when relatively minor landings of frigate mackerel were reported from the South Atlantic Region as well. Additionally, the only recorded commercial bullet mackerel landings occurred in 2018 and were reported as caught from the New England region. All landings were reported as sold for food purposes (i.e. not for bait). The annual total number of vessels that landed bullet mackerel and frigate mackerel ranged from two to seven vessels and landings were sold through two to four

dealers, depending on the year examined. Based on the relatively low annual landings in recent years, it appears that bullet mackerel and frigate mackerel are typically caught incidentally to other species. The annual average ex-vessel value and price over the 5-year time period was $1,499 and $1.29/lb ww (2018 dollars).

Table 2.2.1. Commercial landings, ex-vessel value, and ex-vessel price for bullet mackerel and frigate mackerel landed from the U.S. Atlantic Ocean, 2014-2018 (2018 dollars).

Year	Landings (lb ww)	Ex-Vessel Value	Average Ex-Vessel Price
2014	5,674	$6,349	$1.12
2015	*	*	*
2016	894	$1,374	$1.54
2017	*	*	*
2018	*	*	*
5-year average	1,939	$1,499	$1.29

* denotes confidential data.
Source: ACCSP Commercial Landings Query. Accessed March 29, 2020.

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services. These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic impacts may be distributed through regional markets and should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

Estimates of the U.S. average annual business activity associated with the commercial harvest of bullet and frigate mackerel were derived using the model developed for and applied in NMFS (2018).[1] Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of bullet and frigate mackerel from 2014 through 2018. This business activity is characterized as jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting. Further, the results below are based on average relationships developed through the analysis of many fishing operations that harvest many different species because species-specific models are generally not available.

Between 2014 and 2018, commercial landings of bullet and frigate mackerel resulted in approximately $1,449 in gross revenue on average. This revenue generated no additional jobs, $5,000 in income, $7,000 in value-added, and $14,000 in output per year on average (2018

[1] A detailed description of the input/output model is provided in NMFS (2011).

dollars). Income impacts should not be added to output (sales) impacts because this would result in double counting.

2.2.2. Description for the Recreational Sector

The Atlantic recreational sector is comprised of the private and for-hire modes. The private mode includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire mode is composed of charter boats and headboats (also called party boats). Charter boats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas, headboats carry more passengers and payment is per person. The type of service, from a vessel- or passenger-size perspective, affects the flexibility to search different fishing locations during the course of a trip and target different species since larger concentrations of fish are required to satisfy larger groups of anglers.

Recreational landings have been variable, averaging 4,665 lb ww for bullet mackerel, 324 lb ww for frigate mackerel, and 4,989 lb ww for both species combined annually over the past five years of available data (2014 through 2018) (**Table 1.3.2**). Recreational landings (by weight) of bullet mackerel and frigate mackerel within this time series have all occurred in the South Atlantic Region. Based on the relatively low annual landings, it appears that bullet mackerel and frigate mackerel are typically caught incidentally to other species. As noted in **Section 1.3.1**, fishermen have noted that these species are used as bait. In most circumstances, the catch estimates are accompanied by a relatively high percent standard error (PSE), which is likely reflective of relatively few intercepts.

Table 2.2.1. Recreational landings of bullet mackerel and frigate mackerel from the U.S. Atlantic Ocean, 1999-2018.

Year	Bullet Mackerel Landings (lb ww)	PSE	Frigate Mackerel Landings (lb ww)	PSE	Combined Landings (lb ww)
2014	786	50.5	0	-	786
2015	0	-	1,618	95.3	1,618
2016	11,467	31.5	0	-	11,467
2017	10,247	30.9	0	0	10,247
2018	825	44	0	0	825
5-year average	4,665	-	324	-	4,989

Source: ACCSP Recreational Landings Query based on MRIP data. Accessed March 31, 2020.

Recreational effort derived from the Marine Recreational Information Program (MRIP) database can be characterized in terms of the number of trips as follows:

- Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
- Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.

Other measures of effort are available as well, such as directed trips (the number of individual angler trips that either targeted or caught a particular species). Estimates of catch effort for frigate mackerel by state and mode on the east coast from 2014 through 2018 are provided in **Table 2.2.2**. There were no catch trips in the shore mode for any state on the east coast during these years. All recreational catch trips were either in North Carolina or East Florida during this time. Also, there was no target effort for frigate mackerel in any state or mode from 2014 through 2018.

Table 2.2.2. Number of frigate mackerel recreational catch trips, by mode and state, 2014-2018.

Mode	Year	North Carolina	Florida	Total
Charter	2014	0	0	0
	2015	103	0	0
	2016	152	0	0
	2017	0	0	0
	2018	0	0	0
	Average	51	0	51
Private	2014	0	0	0
	2015	0	3,365	0
	2016	0	0	0
	2017	0	0	0
	2018	0	0	0
	Average	0	673	673
All	2014	0	0	0
	2015	103	3,365	3,468
	2016	152	0	152
	2017	0	0	0
	2018	0	0	0
	Average	51	673	724

Source: NOAA Recreational Fisheries Statistics Query based on MRIP data.

Estimates of catch effort and target effort for bullet mackerel by state and mode from 2014 through 2018 are provided in **Table 2.2.3** and **Table 2.2.4**. There were no landings in the shore mode for any state on the east coast during these years. Catch trips for bullet mackerel only occurred in South Carolina, North Carolina, and New Jersey from 2014 through 2018. Target trips for bullet mackerel only occurred in North Carolina and east Florida. The fact that bullet mackerel were targeted by private anglers off east Florida in 2017 but were not caught is an oddity. This finding suggests that private anglers who targeted bullet mackerel off east Florida that year were unsuccessful in catching them.

Table 2.2.3. Number of bullet mackerel recreational catch trips, by mode and state, 2014-2018.

Mode	Year	South Carolina	North Carolina	New Jersey	Total
Charter	2014	0	780	1,038	1,818
	2015	0	0	0	0
	2016	0	3,474	0	3,474
	2017	0	4,151	0	4,151
	2018	0	1,420	0	1,420
	Average	0	1,965	208	2,173
Private	2014	0	225	13,590	13,815
	2015	0	0	0	0
	2016	0	12,205	0	12,205
	2017	0	7,139	0	7,139
	2018	2,171	377	0	2,548
	Average	434	3,989	2,718	7,141
All	2014	0	1,005	14,628	15,633
	2015	0	0	0	0
	2016	0	15,679	0	15,679
	2017	0	11,290	0	11,290
	2018	2,171	1,797	0	3,968
	Average	434	5,954	2,926	9,314

Source: NOAA Recreational Fisheries Statistics Query based on MRIP data.

Table 2.2.4. Number of bullet mackerel recreational target trips, by mode and state, 2014-2018.

Mode	Year	North Carolina	Florida	Total
Charter	2014	0	0	0
	2015	15	0	0
	2016	0	0	0
	2017	0	0	0
	2018	0	0	0
	Average	3	0	3
Private	2014	0	0	0
	2015	0	0	0
	2016	0	0	0
	2017	0	617	0
	2018	0	0	0
	Average	0	123	123
All	2014	0	0	0
	2015	15	0	15
	2016	0	0	0
	2017	0	617	617
	2018	0	0	0
	Average	3	123	126

Source: NOAA Recreational Fisheries Statistics Query based on MRIP data.

The desire for recreational fishing generates economic activity as consumers spend their income on various goods and services needed for recreational fishing. This spurs economic activity in the region where recreational fishing occurs. In the absence of the opportunity to fish, the income would likely be spent on other goods and services and these expenditures would similarly generate economic activity in the region where the expenditure occurs. As such, the analysis below represents a distributional analysis only.

Estimates of the economic impacts (business activity) associated with recreational angling were calculated using average trip-level impact coefficients derived from the 2016 Fisheries Economics of the U.S. report (NMFS 2018) and underlying data provided by the NOAA Office of Science and Technology. Economic impact estimates were adjusted to 2018 dollars using the annual, not seasonally adjusted Gross Domestic Product implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Recreational fishing generates economic impacts (business activity). As in the commercial sector, business activity for the recreational sector is characterized in the form of jobs, income impacts, value-added impacts, and output impacts. In the recreational sector, economic impacts are determined by the number of target trips taken by state and mode. Because there were no target trips for frigate mackerel from 2014 through 2018, no economic impacts were generated. Between 2014 and 2018, there were 3 target trips in the North Carolina charter sector and 123 target trips in the east Florida private recreational sector per year on average. These target trips

generated no additional jobs, $5,000 in income, $9,000 in value-added, and $15,000 in output per year on average (2018 dollars). Again, income impacts should not be added to output (sales) impacts because this would result in double counting.

2.3 Effects of Management Measures

There are no anticipated direct economic effects from designating bullet mackerel and frigate mackerel as EC species. Such a designation would not affect the landings or fisheries for the two mackerel species. Additionally, landings of bullet mackerel and frigate mackerel are minimal and are not likely an important economic component for the vessels that land them (**Section 2.2.1** and **Section 2.2.2**).

There would be potential indirect economic benefits of designating bullet mackerel and frigate mackerel as EC species if this designation leads to better monitoring of landings through public education and increased awareness. If landings for the two mackerel species were to greatly increase in the future to unsustainable levels, fisheries managers could be made aware before the stocks are depleted which may have subsequent beneficial effects on populations of several economically important predatory fish species, including dolphin and wahoo. These indirect benefits are highly uncertain and cannot be quantified. There are no known costs associated with this action outside of the public costs of regulations. While the net benefits cannot be determined, it is plausible that the potential economic benefits may partially or fully offset the noted costs.

2.4 Public Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs to the private sector are discussed in the effects of management measures. Estimated public costs associated with this action include:

South Atlantic Fishery Management Council (South Atlantic Council) costs of document preparation, meetings, public hearings, and information dissemination	$13,919
NMFS administrative costs of document preparation, meetings, and review	$20,580
TOTAL[2]	$34,499

The estimate provided above does not include any law enforcement costs. Any enforcement duties associated with this action would be expected to be covered under routine enforcement costs rather than an expenditure of new funds. The South Atlantic Council and NMFS administrative costs directly attributable to this amendment and the rulemaking process would be incurred prior to the effective date of the final rule implementing this amendment.

[2] Calculations are inclusive of the estimated cost of total staff time dedicated to amendment development and applicable meeting costs (Scoping, Public Hearings, South Atlantic Council, Scientific and Statistical Committee, and Advisory Panel meetings).

2.5 Net Benefits of Regulatory Action

The estimated non-discounted public costs resulting from the regulation are $34,499 (2018 dollars). The costs resulting from the amendment and the associated rulemaking process should not be discounted as they will be incurred prior to the effective date of the final rule. There are no quantified economic benefits for this action.

Based on the quantified economic effects, this action would decrease net benefits to the Nation. However, as discussed qualitatively in **Section 2.3**, there are potential economic benefits that could mitigate or outweigh the quantified costs. Based on these qualitative and quantitative analyses, the effect on net economic benefits is unclear and there is the potential that this regulatory action could increase net benefits to the Nation.

2.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, these actions have been determined to not be economically significant for the purposes of E.O. 12866.

Chapter 3. Regulatory Flexibility Act Analysis

3.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic effects of various alternatives contained in the regulatory action and to ensure the agency considers alternatives that minimize the expected economic effects on small entities while meeting the goals and objectives of the applicable statutes (e.g., the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)).

With certain exceptions, the RFA requires agencies to conduct an initial regulatory flexibility analysis (IRFA) for each proposed rule. The IRFA is designed to assess the effects various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those effects. An IRFA is primarily conducted to determine whether the proposed regulatory action would have a significant economic effect on a substantial number of small entities. In addition to analyses conducted for the Regulatory Impact Review (RIR), the IRFA provides: 1) a description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed regulatory action; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed regulatory action will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed regulatory action, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule; and 6) a description of any significant alternatives to the proposed regulatory action which accomplish the stated objectives of applicable statutes and would minimize any significant economic effects of the proposed regulatory action on small entities.

In addition to the information provided in this section, additional information on the expected economic effects of the proposed action is included in the RIR.

3.2 Statement of the Need for, Objective of, and Legal Basis for the Proposed Action

A discussion of the reasons why action by the agency is being considered is provided in **Chapter 1.2**. The purpose of this proposed regulatory action is to add bullet mackerel and

frigate mackerel to the Fishery Management Plan for the Dolphin Wahoo fishery of the Atlantic (Dolphin Wahoo FMP) as ecosystem component (EC) species. The objective of this proposed regulatory action is to acknowledge the ecological role of bullet mackerel and frigate mackerel as forage fish in general and specifically as prey for wahoo. The Magnuson-Stevens Act serves as the legal basis for the proposed regulatory action.

3.3 Description and Estimate of the Number of Small Entities to which the Proposed Action would Apply

This proposed regulatory action would add bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP as EC species. Even though this proposed regulatory action would alter the existing regulations to indicate bullet mackerel and frigate mackerel are EC species in the Dolphin Wahoo FMP, it would not implement any new management measures and is therefore administrative in nature. As such, the proposed regulatory actions would not directly regulate any small entities.

3.4 Description of the Projected Reporting, Record-keeping and Other Compliance Requirements of the Proposed Action

This proposed regulatory action would not establish any new reporting or record-keeping requirements.

3.5 Identification of All Relevant Federal Rules, which may Duplicate, Overlap or Conflict with the Proposed Action

No duplicative, overlapping, or conflicting federal rules have been identified.

3.6 Significance of Economic Impacts on a Substantial Number of Small Entities

Substantial Number of Small Entities Criterion

This proposed regulatory action, if implemented, is not expected to directly regulate any small entities. Therefore, this proposed action is not expected to affect a substantial number of small entities.

Significant Economic Impact Criterion

The outcome of "significant economic impact" can be ascertained by examining two factors: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

No entities are expected to be directly affected by this regulatory action. Thus, the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profits for a substantial number of small entities?

No entities are expected to be directly affected by this regulatory action and therefore profits would also not be expected to be affected.

Based on the information above, a significant reduction in profits for a substantial number of small entities is not expected as a result of the proposed regulatory action.

3.7 Description of the Significant Alternatives to the Proposed Action and Discussion of How the Alternatives Attempt to Minimize Economic Impacts on Small Entities

This proposed regulatory action, if implemented, is not expected to directly regulate any small entities and therefore would not affect the profits of any small entity. As a result, the issue of significant alternatives is not relevant.

Chapter 4. References

Collette, B. B. and G. Klein-MacPhee, editors. 2002. Bigelow and Schroeder's Fishes of the Gulf of Maine, third edition. Smithsonian Institution Press. Washington, D.C.

Froese, R. and D. Pauly (editors). 2016. FishBase. http://www.fishbase.org/search.php.

Kells, V. and K. Carpenter. 2011. *A Field Guide to Coastal Fishes from Maine to Texas.* The Johns Hopkins University Press.

MAFMC (Mid-Atlantic Fishery Management Council). 2017. Unmanaged Forage Omnibus Amendment. Including an Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis. Mid-Atlantic Fishery Management Council, 800 North State Street, Dover, DE 19901. 223 pp.

National Marine Fisheries Service Greater Atlantic Regional Office. June 19, 2017. Letter from Regional Administrator John Bullard to Mid-Atlantic Fishery Management Council Chairman Mike Luisi.

NMFS. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-187, 243 p.

NMFS 2020. NMFS's Response to Council Motion- Dolphin Wahoo Amendment 12 February 7, 2020. https://safmc.net/briefing-books/briefing-book-2020-march-council-meeting/.

Perelman, J. N., Schmidt, K. N., Haro, I., Tibbetts, I. R., and Zischke, M. T. 2017. Feeding dynamics, consumption rates and daily ration of wahoo *Acanthocybium solandri* in Indo Pacific waters. J Fish Biol 90: 1842−1860.

Poland, S. J., F. S. Scharf and M. D. Staudinger. 2019. Foraging ecology of large pelagic fishes in the US South Atlantic: structured piscivory shapes trophic niche variation. Marine Ecology Progress Series (631): 181-199.

Poland, S. J. 2014. Trophic Dynamics of Pelagic Fishes in the U.S. South Atlantic Inferred from Diet and Stable Isotope Analysis. Thesis submitted to the University of North Carolina Wilmington, Department of Biology and Marine Biology.

Rudershausen, P. J., J. A. Buckel, J. Edwards, D. P. Gannon, C. M. Butler, and T. W. Averett. 2010. Feeding ecology of blue marlins, dolphinfish, yellowfin tuna, and wahoos from the North Atlantic Ocean and comparisons with other oceans. Transactions of the American Fisheries Society. 139(5): 1335-1359.

Vaske, T. Jr., Vooren, C. M., and Lessa, R. P. 2003. Feeding strategy of yellowfin tuna (T*hunnus albacares*), and wahoo (*Acanthocybium solandri*) in the Saint Peter and Saint Paul Archipelago, Brazil. Bol Inst Pesca 29: 173−181.

Appendix A: Factors for Conservation and Management

Ecosystem component (EC) species are defined as "*stocks that a Council or the Secretary has determined do not require conservation and management, but desire to list in a fishery management plan (FMP) in order to achieve ecosystem management objectives*" (50 C.F.R §600.305(d)(13)). According to National Standards General guidelines as found in 50 C.F.R §600.305(c)(1) *"…a Council should consider the following non-exhaustive list of factors when deciding whether additional stocks require conservation and management:*

(i) The stock is an important component of the marine environment.

(ii) The stock is caught by the fishery.

(iii) Whether an FMP can improve or maintain the condition of the stock.

(iv) The stock is a target of a fishery.

(v) The stock is important to commercial, recreational, or subsistence users.

(vi) The fishery is important to the Nation or to the regional economy.

(vii) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.

(viii) The economic condition of a fishery and whether an FMP can produce more efficient utilization.

(ix) The needs of a developing fishery, and whether an FMP can foster orderly growth.

(x) The extent to which the fishery is already adequately managed by states, by state/Federal programs, or by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable law."

If it is determined that a stock requires conservation and management, then "*such stocks must have annual catch limits (ACL), other reference points, and accountability measures. Other stocks that are identified in an FMP (i.e., EC species or stocks that the fishery interacts with but are managed primarily under another FMP)…do not require ACLs, other reference points, or accountability measures*" (50 C.F.R §600.310(d)(1)). The following section provides an initial analysis of the aforementioned factors:

i. *The stock is an important component of the marine environment.*

Stocks of bullet mackerel and frigate mackerel are an important component of the marine environment in some contexts. While the species may play a minor role in the context of all species in the North Atlantic, both species are an important component in the diet of wahoo. Bullet mackerel can reach about 20 inches in length and resemble frigate mackerel. They feed on a variety of prey, especially clupeoids (i.e. herrings and sardines), crustaceans, and squids. Bullet mackerel are found nearly worldwide in warm waters. In the western Atlantic, they are found from Cape Cod to the Gulf of Mexico and often form schools (Collette and Klein-MacPhee 2002; Froese and Pauly 2016). Frigate mackerel can reach two feet in length and exhibit schooling behavior as well. Frigate mackerel feed on a variety of fish, squids, and small

crustaceans. In the western North Atlantic frigate mackerel are mostly found from North Carolina to Florida (Kells and Carpenter 2011, Froese and Pauly 2016).

Both bullet mackerel and frigate mackerel (*Auxis* spp.) have been identified in the diets of dolphin and wahoo in the North Atlantic (Rudershausen et al. 2010; Poland 2014). Wahoo particularly have shown a strong reliance on bullet mackerel and frigate mackerel, with studies indicating that the *Auxis* species are the most dominant forage species observed in the diets of wahoo (Rudershausen et al. 2010; Poland 2014; Poland et al. 2019). While dolphin tend to have more diverse diets and a lower reliance on the *Auxis* species, bullet mackerel and frigate mackerel have been identified as important prey for dolphin at times (Rudershausen et al. 2010; Poland 2014; Poland et al. 2019). Additionally, bullet mackerel and frigate mackerel have been identified as important forage for other offshore pelagic predatory species such as blue marlin and yellowfin tuna (Rudershausen et al. 2010; Poland 2014; Poland et al. 2019).

ii. ***The stock is caught by the fishery.***

Compared to many managed species, annual landings of Atlantic bullet mackerel and frigate mackerel are low along the entire Atlantic coastline. Over the past 20 years of available data (1999 to 2018), average annual commercial landings of bullet mackerel and frigate mackerel were 4,395 pounds whole weight (lb ww) (**Table 1.3.1**). There were no reported landings of bullet mackerel other than in 2018. Bullet mackerel and frigate mackerel are similar in appearance and it is possible that some landings of bullet mackerel may have been misidentified as frigate mackerel. Over this same time period, there were 1,189 lb ww of bullet mackerel and 3,569 lb ww of frigate mackerel landed on average recreationally each year (**Table 1.3.2**). The extent to which these landings occurred in the dolphin wahoo fishery is unknown; however, it is unlikely that these species were often harvested in conjunction with efforts to harvest dolphin and wahoo, especially in the commercial sector. Bullet mackerel and frigate mackerel have largely been landed commercially in the Mid-Atlantic region using gill net, pound net, float trap, and otter trawl gear, none of which are allowable gear types in the dolphin wahoo fishery.

Recreational landings have been variable and sporadic, averaging 1,189 lb ww for bullet mackerel, 3,569 lb ww for frigate mackerel, and 4,759 lb ww for both species combined annually over the past twenty years of available data (1999 through 2018) (**Table 1.3.2**). Recreational catches of bullet mackerel and frigate mackerel have largely occurred in the South Atlantic Region, with some limited catches reported from the Mid-Atlantic Region. Furthermore, recreational fishermen have also noted that these species are used as bait.

Based on the relatively low annual landings for both the commercial and recreational sectors, it appears that bullet mackerel and frigate mackerel are typically caught incidentally to other species and are not the targets of a directed fishery.

iii. ***Whether an FMP can improve or maintain the condition of the stock.***

Neither stock has been assessed to date; thus, the stock condition is not well understood for either species. There are low reported landings of either species in the U.S. Atlantic Exclusive Economic Zone (**Tables 1.3.1** and **1.3.2**). However, there is no other available information

suggesting that the stocks may be in a depleted or otherwise diminished condition, or that management is necessary to address such conditions. While the condition of the stocks is not well understood, conservation and management under a FMP usually presents some potential to improve or maintain the condition of the stock. Unless harvest is occurring in state waters, management under a FMP would allow management measures to be adopted that would at least be able to maintain the current condition of the stocks.

Adding bullet mackerel and frigate mackerel to the FMP for the Dolphin and Wahoo Fishery of the Atlantic as EC species does meet ecosystem management objectives (50 CFR 600.305(d)(13)). The EC designation recognizes the ecosystem role of these mackerel species as prey for many economically important species such as wahoo and other billfish (Rudershausen et al. 2010; Poland 2014; Poland et al. 2019). Beneficial results include raised awareness among the fishers, fishing communities, data collecting agencies, and regulatory entities managing dolphin, wahoo, bullet mackerel, and frigate mackerel. Public education and awareness of the EC designation may encourage reporting landings of these two mackerel species more than before. Acknowledging the key role these mackerel species play in supporting important commercial and recreational fisheries could improve stakeholder perceptions of management efforts and foster timelier decisions making to ensure management is streamlined should management measures within the South Atlantic Council's jurisdiction be deemed necessary in the future.

iv. ***The stock is a target of a fishery.***

Given the relatively low landings of either bullet mackerel or frigate mackerel, the stocks of these species do not seem to be the target of any fishery in 20 years (**Tables 1.3.1** and **1.3.2**). The species appear to be incidentally caught when fishing for other species commercially. Recreationally, there have been very few trips intercepted that indicated targeting bullet mackerel or frigate mackerel, and they were used as bait. Furthermore, bullet mackerel and frigate mackerel are not likely an important economic component for the vessels that do land them (**Section 2.2.1** and **Section 2.2.2**). The annual average ex-vessel value and price during 2014-2018 was $1,499 and $1.29/lb whole weight (ww) (2018 dollars) (**Table 2.2.1**). During the same time period, estimates of recreational catch effort and target effort were also low (**Tables 2.2.3** and **2.2.4**).

v. ***The stock is important to commercial, recreational, or subsistence users.***

As discussed in the sections above, the stocks of bullet mackerel and frigate mackerel do not appear to be directly important to commercial, recreational, or subsistence users given the relatively low landings of the two species throughout the Atlantic in 20 years (**Tables 1.3.1** and **1.3.2**). Such stocks may be indirectly important in supporting wahoo populations that are important to and harvested by some commercial, recreational, or subsistence users given the strong reliance of wahoo on bullet mackerel and frigate mackerel as forage species. Therefore, the EC designation of these two species could achieve ecosystem management objectives (50 CFR 600.305(d)(13)) and could lead to better monitoring of landings through public education and increased awareness. If landings for the two mackerel species were to greatly increase in the future to unsustainable levels, fisheries managers could be made aware before the stocks are

depleted which may have subsequent beneficial effects on populations of several economically important predatory fish species, including dolphin and wahoo.

vi. ***The fishery is important to the Nation or to the regional economy.***

Given the low landings of either bullet mackerel or frigate mackerel in 20 years (**Tables 1.3.1** and **1.3.2**), annual average ex-vessel value and price during 2014-2018 of $1,499 and $1.29/lb ww (2018 dollars) (**Table 2.2.1**), and low estimates of recreational catch effort and target effort during 2014-2018 (**Tables 2.2.3** and **2.2.4**), the fisheries for these species do not appear to be of notable importance to the Nation or the regional economy. However, in light of the strong reliance of wahoo on bullet mackerel and frigate mackerel as forage species, these species appear to be important prey items for wahoo, which is subject to a fishery with much greater importance to the national and regional economy. Therefore, the EC designation of these two species could achieve ecosystem management objectives (50 CFR 600.305(d)(13)) and could lead to better monitoring of landings through public education and increased awareness. If landings for the two mackerel species were to greatly increase in the future to unsustainable levels, fisheries managers could be made aware before the stocks are depleted.

vii. ***The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.***

There are no known competing interests or conflicts among user groups within the current fisheries harvesting bullet mackerel or frigate mackerel as discussed in sections above; therefore, conservation and management under an FMP would not have any competing interests to resolve.

viii. ***The economic condition of a fishery and whether an FMP can produce more efficient utilization.***

Given the low landings for the species in 20 years (**Tables 1.3.1** and **1.3.2**), it appears that the bullet mackerel and frigate mackerel stocks are not being directly utilized to a significant extent. Therefore, efficient utilization of these stocks is not likely to be improved by conservation and management under an FMP. However, the EC designation of these two species could achieve ecosystem management objectives (50 CFR 600.305(d)(13)) and could lead to better monitoring of landings through public education and increased awareness. If landings for the two mackerel species were to greatly increase in the future to unsustainable levels, fisheries managers could be made aware before the stocks are depleted.

ix. ***The needs of a developing fishery, and whether an FMP can foster orderly growth.***

There is currently no known developing fishery for bullet mackerel or frigate mackerel in the Atlantic as evidenced in the discussion provided in the sections above. Therefore, there are no needs of a developing fishery to consider and there appears to be no growth in which to promote order.

x. ***The extent to which the fishery is already adequately managed by states, by state/Federal programs, or by Federal regulations pursuant to other FMPs or international***

commissions, or by industry self-regulation, consistent with the requirements of the Magnuson-Stevens Act and other applicable law.

There are no known regulations in place to directly manage bullet mackerel or frigate mackerel on the state, federal, or international levels. These species may be indirectly managed through existing state or federal fisheries regulations such as gear restrictions or generic bag limits and size limits. In the Atlantic exclusive economic zone, vessels with federal commercial dolphin wahoo permits already report all landings that are sold to a federally permitted dealer including species that are not federally managed. Once implemented, the new requirements of the South Atlantic electronic for-hire program will require that federally permitted for-hire snapper-grouper, dolphin wahoo, and coastal migratory pelagic vessels in the Atlantic report all landings including species that are not subject to federal management. The Marine Recreational Information Program captures information on all species caught by recreational fishermen. Furthermore, North Carolina has introduced fish ID codes in its state trip ticket forms for these mackerel species since 2018. Public education and awareness of the EC designation may encourage reporting landings of these two mackerel species more than before, providing some biological benefits. As discussed in sections above, there is no directed fishery (commercial or recreational) for these species in the Atlantic region, catches are incidental to other fisheries or these species are caught and used as bait. If landings for bullet mackerel and frigate mackerel were to increase in the future, management measures within the South Atlantic Council's jurisdiction could be explored in a future amendment.

Appendix B: Fishery Impact Statement (FIS)

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires a FIS be prepared for all amendments to Fishery Management Plans (FMPs). The FIS contains an assessment of the likely biological, social, and economic effects of the conservation and management measures on: 1) fishery participants and their communities; 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and 3) the safety of human life at sea.

Action Contained in Amendment 12 to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo Amendment 12)

Dolphin Wahoo Amendment 12 proposes to add bullet mackerel and frigate mackerel to the Dolphin Wahoo FMP and designate the two mackerel species as ecosystem component (EC) species.

Assessment of Biological Effects

Bullet mackerel and frigate mackerel were determined as EC species because they do not require conservation and management in the South Atlantic Region (**Appendix A**), but the South Atlantic Council decided to list them in the Dolphin Wahoo FMP in order to achieve ecosystem management objectives (50 CFR 600.305(d)(13)). The EC designation recognizes the ecosystem role of these mackerel species as prey for wahoo. Scientific studies reveal that wahoo have a high reliance on scombrids and suggest that wahoo specialize on this prey group.

The action to add bullet mackerel and frigate mackerel as EC species to the Dolphin Wahoo FMP is primarily an administrative action because there are no associated management measures in this amendment that would alter the fisheries for dolphin, wahoo, bullet mackerel, or frigate mackerel. Landings of bullet mackerel and frigate mackerel are minimal (**Tables 1.3.1** and **1.3.2**) and thus do not likely constitute an important component of commercial and recreational fishing activities for these species. As such, there are no expected direct or indirect biological effects for the Dolphin Wahoo fishery that would result from this action. Beneficial biological effects would be: raised awareness among the fishers, fishing communities, data collecting agencies, and regulatory entities managing dolphin, wahoo, bullet mackerel, and frigate mackerel. Public education and awareness of the EC designation may encourage reporting landings of these two mackerel species more than before, providing some biological benefits. If landings for bullet mackerel and frigate mackerel were to increase in the future, management measures within the South Atlantic Council's jurisdiction could be explored in a future amendment.

Assessment of Economic Effects

There are no anticipated direct economic effects from listing bullet mackerel and frigate mackerel as EC species. Such a designation will not affect the landings or fisheries for the two mackerel species. Additionally, landings of bullet mackerel and frigate mackerel are minimal and are not likely an important economic component for the vessels that land them (**Section 2.2.1** and **Section 2.2.2**). There may be indirect economic benefits of designating bullet mackerel and frigate mackerel as EC species if this designation leads to better monitoring of landings through public education and increased awareness. If landings for the two mackerel species were to greatly increase in the future to unsustainable levels, fisheries managers could be made aware before the stocks are depleted which may have subsequent beneficial effects on populations of several economically important predatory fish species, including dolphin and wahoo. These indirect benefits are highly uncertain and cannot be quantified. There are no known costs associated with this action outside of the public costs of regulations. While the net benefits cannot be determined, it is plausible that the potential economic benefits may partially or fully offset the noted costs.

Assessment of Social Effects

Designating bullet mackerel and frigate mackerel as EC species in the Dolphin Wahoo FMP, as proposed, is not anticipated to result in direct positive or negative social effects. Landings of bullet mackerel and frigate mackerel are minimal in the U.S. Atlantic Ocean (**Tables 1.3.1** and **1.3.2**) and thus do not likely constitute an important component of commercial and for-hire businesses or private recreational fishing activity. Designating bullet mackerel and frigate mackerel as EC species may have indirect social benefits as it could foster timelier decisions making and ensure management is streamlined should management measures within the South Atlantic Fishery Management Council's jurisdiction be deemed necessary in the future. The overall social effects should be positive for both recreational and commercial sectors as the EC designation recognizes the ecosystem role of these mackerel species as prey for wahoo while not requiring unnecessary management constraints for a species that is currently rarely encountered in the Atlantic.

Assessment of Effects on Safety as Sea

Dolphin Wahoo Amendment 12 is not expected to result in direct impacts to safety at sea.