

05/08/2023

Modifications to Commercial Gulf King Mackerel Gillnet Fishing Season



Abbreviated Framework Amendment 12 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region

May 2023



This is a publication of the Gulf of Mexico Fishery Management Council Pursuant to National Oceanic and Atmospheric Administration Award No. NA20NMF4410007.

This page intentionally blank

FRAMEWORK AMENDMENT 12: MODIFICATIONS TO COMMERCIAL GULF KING MACKEREL GILLNET FISHING SEASON

Responsible Agencies and Contact Persons

Gulf of Mexico Fishery Management Council (Council) 813-348-1630
4107 W. Spruce Street, Suite 200 813-348-1711 (fax)
Tampa, Florida 33607 gulfcouncil@gulfcouncil.org
Natasha Méndez-Ferrer (natasha.mendez@gulfcouncil.org) <http://www.gulfcouncil.org>

National Marine Fisheries Service (Lead Agency) 727-824-5305
Southeast Regional Office 727-824-5308 (fax)
263 13th Avenue South <http://sero.nmfs.noaa.gov>
St. Petersburg, Florida 33701
Kelli O'Donnell (kelli.odonnell@noaa.gov)

Type of Action

Administrative
 Draft

Legislative
 Final

ABBREVIATIONS USED IN THIS DOCUMENT

ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	annual catch limit
AM	accountability measure
CMP	Coastal Migratory Pelagic
Council	Gulf of Mexico Fishery Management Council
Councils	Gulf of Mexico and South Atlantic Fishery Management Councils
E.O.	Executive Order
FMP	Fishery Management Plan
Gulf	Gulf of Mexico
IFQ	Individual Fishing Quota
IRFA	initial regulatory flexibility analysis
GDP	Gross Domestic Product
lb lw	pounds landed weight
lbs pw	pounds product weight
NMFS	National Marine Fisheries Service
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
RIR	Regulatory Impact Review
RFA	Regulatory Flexibility Act
PS	producer surplus

TABLE OF CONTENTS

Abbreviations Used in this Document	ii
Table of Contents	iii
List of Tables	iv
List of Figures	v
Chapter 1. Introduction	1
1.1 Background	1
1.2 Purpose and Need	6
1.3 Modifications to Fishing Season for King Mackerel Gillnet Fishery	7
Chapter 2. Regulatory Impact Review	8
2.1 Introduction	8
2.2 Problems and Objectives	8
2.3 Description of the Fishery	8
2.3.1 Commercial Sector	8
2.4 Impacts of Management Measures	15
2.5 Public and Private Costs of Regulations	16
2.6 Determination of Significant Regulatory Action	16
Chapter 3. Regulatory flexibility act analysis	17
3.1 Introduction	17
3.2 Statement of the need for, objective of, and legal basis for the proposed action	17
3.3 Description and estimate of the number of small entities to which the proposed action would apply	18
3.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed action including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records	19
3.5 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed action	19
3.6 Significance of economic impacts on a substantial number of small entities	19
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	20
Chapter 4. List of Preparers and Reviewers	21
Chapter 5. References	22

LIST OF TABLES

Table 1.1.1. Gulf king mackerel Southern Zone Gillnet landings in pounds landed weight (lbs lw).	5
Table 1.1.2. Gulf king mackerel commercial gillnet landings (lbs lw), quota, payback-adjusted quota, percent quota landed, and closure dates for 2016 – 2022.	6
Table 2.3.1.1. Number of valid or renewable federal commercial king mackerel permits and gillnet endorsements.	9
Table 2.3.1.2. Number of vessels, number of trips, and landings (lbs lw) by year for the Gulf king mackerel gillnet component.....	11
Table 2.3.1.3. Number of vessels and ex-vessel revenues by year (2021 dollars) for the Gulf king mackerel gillnet component.....	12
Table 2.3.1.4. Annual average costs as a percentage of gross revenue for vessels that harvested king mackerel in the Gulf and South Atlantic from 2016 through 2018.	13
Source: Liese and Overstreet (2021).....	13
Table 2.3.1.5. Average annual business activity (2017 through 2021) associated with the commercial gillnet harvest of Gulf king mackerel in the Southern Zone.....	15

LIST OF FIGURES

Figure 1.1.1. Gulf and Atlantic king mackerel migratory group boundaries as currently used by the Councils.	1
Figure 2.3.1.1. Top species harvested by king mackerel gillnet vessels in Florida in terms of landings in lbs lw.	10
Figure 2.3.1.2. Top species harvested by king mackerel gillnet vessels in Florida in terms of ex-vessel revenue (2021 dollars).....	10

CHAPTER 1. INTRODUCTION

1.1 Background

Gulf of Mexico (Gulf) migratory group king mackerel (Gulf king mackerel) is jointly managed by the Gulf of Mexico Fishery Management Council (Council) and the South Atlantic Fishery Management Council (together: “Councils”) under the Fishery Management Plan (FMP) for Coastal Migratory Pelagic (CMP) Resources in the Gulf and Atlantic Region (CMP FMP). A summary of the commercial fishing zones for Gulf king mackerel and Atlantic migratory group king mackerel (Atlantic king mackerel) is shown in Figure 1.1.1. The Gulf Southern Zone has two components based on gear type: hook-and-line (handline component), and run-around gillnet (gillnet component).

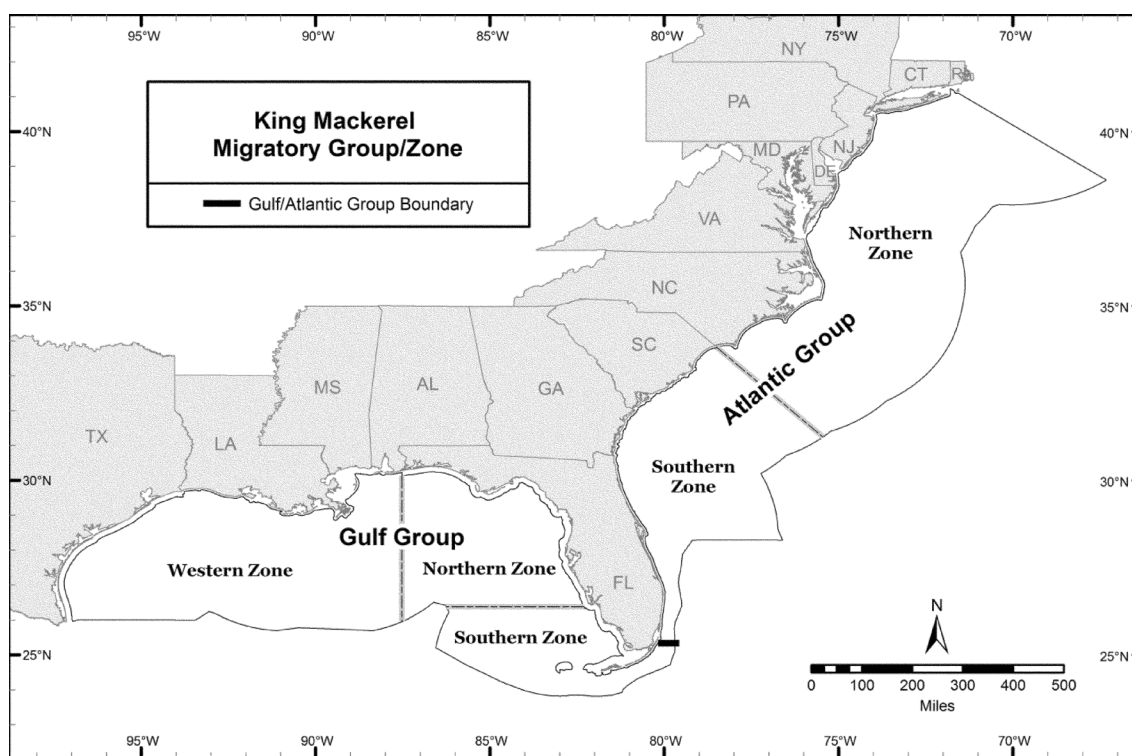


Figure 1.1.1. Gulf and Atlantic king mackerel migratory group boundaries as currently used by the Councils. Gulf king mackerel is further divided into commercial management Zones, which are managed by the Gulf Council. The South Atlantic Council management area is divided into a Northern and Southern Zone, extending north to the easternmost tip of Long Island, New York.

The Gulf Southern Zone fishing year begins July 1 for both components; however, an endorsement to the federal commercial king mackerel permit is required for the gillnet component. Fishing for Gulf king mackerel with run-around gillnets is only permissible in the Gulf Southern Zone. Prior to 1999 (GMFMC 1999), the gillnet component of the CMP fishery did not have a seasonal closure; although, most permit holders with a gillnet endorsement waited until January to start fishing. Their preference to wait was based the desire to fish for other

species, mainly spiny lobster and stone crab, in the late summer and early fall, respectively. In 1999, a Framework Amendment (GMFMC 1999) established a fixed closed season from July 1 until the Tuesday after the Martin Luther King Jr. holiday in January. This Council document formalized the “gentleman’s agreement” between the small number of gillnet participants, which was to wait until January to fish, so they reduced the chance of a quota overage for the gillnet component. Fishing is allowed the first weekend after opening; but is closed all subsequent weekends and holidays while the season remains open.

§ 622.378 Seasonal closures of the Gulf migratory group king mackerel gillnet fishery

(a) ***Seasonal closures of the gillnet component for Gulf migratory group king mackerel.*** The gillnet component for Gulf migratory group king mackerel in or from the southern zone is closed each fishing year from July 1 until 6 a.m. on the day after the Martin Luther King Jr. Federal holiday. The gillnet component is open on the first weekend following the Martin Luther King Jr. holiday, provided a notification of closure has not been filed under [§ 622.8\(b\)](#). The gillnet component is closed all subsequent weekends and observed Federal holidays. Weekend closures are effective from 6 a.m. Saturday to 6 a.m. Monday. Holiday closures are effective from 6 a.m. on the observed Federal holiday to 6 a.m. the following day. All times are eastern standard time. During these closures, a person aboard a vessel using or possessing a gillnet with a stretched-mesh size of 4.75 inches (12.1 cm) or larger in the southern zone may not fish for or possess Gulf migratory group king mackerel. (See [§ 622.369\(a\)\(1\)\(iii\)](#) for a description of the southern zone.)

At its April 2022 meeting, the Council discussed a request from the Gulf king mackerel commercial gillnet component to remove the weekend and holiday seasonal closures during that fleet’s open season. The request stated that the removal of the weekend and holiday closures would allow the gillnet component to be more efficient by allowing participants to harvest the gillnet quota as quickly as possible and return to harvesting other species. These closures were intended to prevent large gillnet quota overages. However, for the last ten years, the gillnet fleet has cooperated with the National Marine Fisheries Service (NMFS) and voluntarily stopped fishing when it is close to landing its quota. The fleet then waits for NMFS to inform it if it can continue fishing or if the season will be closing. Due to the low number of participants in the king mackerel gillnet component, this practice has been successful and it is expected to continue.

Description of Fishing Practices Using Run-Around Gillnet Gear

There are 16 fishermen who hold an active endorsement for run-around gillnet gear to the federal commercial king mackerel permit (determined on January 31, 2023), and this gear can only be used in the Gulf Southern Zone. There has been a moratorium on gillnet endorsements since 1995 with the implementation of Amendment 8 to the CMP FMP (GMFMC and SAFMC 1996). Amendment 9 to the CMP FMP (GMFMC and SAFMC 1998) established a permanent gillnet endorsement and prohibited transfer of a gillnet endorsement unless it was to an immediate family member only. In 2016, Framework Amendment 3 to the CMP FMP removed latent gillnet endorsements that were not used to land greater than one pound for any single year between 2006-2015 (GMFMC 2015). In addition, although a vessel with a gillnet endorsement by default also has a federal commercial king mackerel permit, those vessels are prohibited from commercial fishing for king mackerel with hook-and-line gear. The practice of using this gear in South Florida is unique to the limited users of these communities. Historically, this fishery has been prosecuted by using spotter aircraft to locate large schools of king mackerel transiting the coast, which are then targeted by federally permitted vessels after the season opens and once the gillnet component determines the market price is adequate to harvest gillnet-caught king mackerel. In general, this small group of permitted fishermen is largely self-regulated by closely working together to communicate individual vessel landings per trip and taking turns to allow each vessel the opportunity to harvest king mackerel. Once the gillnet component begins fishing, its quota is usually quickly landed.

The weekend and holiday closures were originally included in the seasonal closure because the very rapid catch rates of Gulf king mackerel in run-around gillnet gear left little time for NMFS to implement a closure and prevent a quota overage, especially when landings were coming in on weekends and holidays when federal government offices are typically closed. In recent years, the gillnet component has continued to look for ways to efficiently conduct its fishing season, with an extended season duration not being the primary goal.

Representatives from the gillnet component have requested removing the prohibition of pursuing Gulf king mackerel during weekends and observed federal holidays. Fishing vessels with a gillnet endorsement also pursue and are more economically dependent on the spiny lobster and stone crab fisheries, and are set up to pull crab traps much of the year. When getting ready for run-around gillnet fishing for king mackerel, crab pot pulling gear is removed, and large drums holding the run-around gillnets are installed on the vessel. The objective of the gillnet component is to complete its fishing season as quickly and efficiently as possible, so that those vessels may then resume fishing for stone crab and spiny lobster.

Landings Information and Regulatory Requirements

While federally permitted dealers have been required to report gillnet landings daily since the 2014/2015 fishing year (GMFMC and SAFMC 2013), gillnet fishermen have been working with NMFS for the past ten years to prevent overages by voluntarily reporting landings daily to NMFS Southeast Fisheries Science Center (SEFSC) and Southeast Regional Office (SERO) prior to trip ticket data being submitted. Further, they voluntarily stop fishing when landings are

approaching the gillnet component's quota. In order to ease the burden on federally permitted seafood dealers, Framework Amendment 3 implemented regulations that required dealers to report gillnet landings daily by some means as developed by NMFS (GMFMC 2015). Landings are currently reported by 10:00 a.m. following offloading. This allows fishermen to get real-time landings updates before they head back out to fish. The current weekend closure, starting at 6:00 a.m. on Saturday, does not allow enough time for the fleet to return from the fishing grounds and offload if it did not catch fish until Friday night. Based on the desire by the gillnet component to increase fleet efficiency by reducing time and costs, and on the 10-year record of close cooperation with the SEFSC and SERO to monitor landings, the fleet has requested that the Council consider removal of the weekend and holiday closures.

The minimum allowable mesh size for a run-around gillnet used to harvest Gulf king mackerel is 4.75 inches (12.1 cm) stretched mesh. Landings by the gillnet component are shown in Table 1.1.1 for the 1991/1992 through 2021/2022 fishing years in pounds landed weight. The use of landed weight for king mackerel represents a combination of whole and gutted weight, since practices and handling of fish post-harvest may vary depending on the gear used (hook-and-line versus gillnet). The gillnet component operates under a post-season accountability measure (AM), whereby the following fishing year's annual catch limit (ACL) and quota is reduced by the amount of any exceedance of the ACL in the previous fishing year (GMFMC 2015). Since the implementation of the payback post-season AM in 2016, the gillnet component has marginally exceeded its quota three times: 2018/19, 2020/21, and 2021/22 (Table 1.1.2).

Table 1.1.1. Gulf king mackerel Southern Zone Gillnet landings in pounds landed weight (lbs lw).

Year	Landings
1991/1992	327,184
1992/1993	915,671
1993/1994	432,312
1994/1995	392,867
1995/1996	599,901
1996/1997	424,593
1997/1998	603,144
1998/1999	991,297
1999/2000	390,749
2000/2001	434,681
2001/2002	316,814
2002/2003	349,924
2003/2004	458,194
2004/2005	645,985
2005/2006	491,046
2006/2007	468,044
2007/2008	586,800
2008/2009	845,017
2009/2010	589,462
2010/2011	522,267
2011/2012	437,040
2012/2013	498,609
2013/2014	595,382
2014/2015	543,730
2015/2016	529,745
2016/2017	538,213
2017/2018	552,775
2018/2019	631,211
2019/2020	517,481
2020/2021	587,320
2021/2022*	594,362
2022/2023*	615,665

Source: SEFSC Commercial data for 2008/2009-2021-2022 (August 31, 2022). ACL landings data for 2022/2023 (March 9, 2023).

* Data are preliminary.

Table 1.1.2. Gulf king mackerel commercial gillnet landings (lbs lw), quota, payback-adjusted quota, percent quota landed, and closure dates for 2016 – 2022.

Year	Landings	Quota	Adjusted Quota	Percent of Quota Landed	Closure Date
2016/17	538,213	619,500	None	86.9	2/10/2017 reopened 5/11/2017 82 FR 10553 82 FR 21314
2017/18	552,775	596,400	None	92.7	None
2018/19	631,211	585,900	None	107.7	2/8/2019 84 FR 3723
2019/20	517,481	575,400	530,043	89.9	2/25/2020 84 FR 61568 85 FR 11861
2020/21	587,320	575,400	None	102.1	1/28/2021 86 FR 7815
2021/22	594,362*	575,400	563,480	103.3	3/2/2022 86 FR 54871 87 FR 11596
2022/23	615,665*	653,184	634,222	97.1	87 FR 78875

*Landings are considered preliminary

Source: SEFSC Commercial ACL data for 2016/2017-2021-2022 (August 31, 2022). ACL landings data for 2022/2023 (March 9, 2023).

Note: On January 6, 2023, a Framework Amendment increased the commercial gillnet quota (GMFMC 2022). Effective January 17, 2023, a post-season payback AM reduced the gillnet component quota for 2022/2023 due to the 2021/2022 overage. Due to the timing of publication of payback notices, total prior year overages based on landings and *Federal Register* noticed payback adjusted ACLs may not match.

1.2 Purpose and Need

The purpose is to allow the Gulf king mackerel gillnet component of the CMP fishery to fish without interruption from the season start date until NMFS determines that the gillnet quota has been met.

The need is to remove an outdated regulatory requirement that is no longer necessary to manage harvest by the Gulf king mackerel gillnet component.

1.3 Modifications to Fishing Season for King Mackerel Gillnet Fishery

While most fleets would want to extend their fishing season, the objective of the gillnet component is to complete its fishing season as quickly and efficiently as possible, so that those vessels may then resume fishing for stone crab and spiny lobster. The current seasonal closure limits the time available to fish due to how the fishery is prosecuted and lengthy offload times. Due to the current and demonstrably effective working relationship between NMFS and the gillnet component participants, and the post-season AM, these fishermen have requested removal of the subsequent weekend and observed federal holiday closures after the fishing season opens on the Tuesday after the Martin Luther King Jr. holiday in January.

Option 1. Maintain the current weekends and federal holiday closures for the gillnet component for Gulf king mackerel. The gillnet component is open on the first weekend following the Martin Luther King Jr. holiday and is closed all subsequent weekends and observed Federal holidays.

Preferred Option 2. Remove the weekend and holiday closure for the gillnet component for Gulf migratory group king mackerel.

Discussion:

Both options retain the fixed closed season of July 1 until the Tuesday after the Martin Luther King Jr. holiday, as implemented in 1999 (GMFMC 1999). Industry representatives have indicated that **Preferred Option 2**, removal of the subsequent weekend and holiday closures after the gillnet fishing season has opened, is their favored option. When the weekend and holiday closure was implemented, a dealer permit was not required to receive king mackerel. Dealers that reported 95% of the king mackerel landings in the previous year were selected to report to federal and state port agents, who passed the information to NMFS. This process was dependent on the ability of the port agents to contact dealers and receive landings in a timely manner. With communication issues that occurred, there was a higher chance of the quota being exceeded due to the short season of this fishery. Fishermen indicate that the original purpose of the weekend and holiday closure is unnecessary, given the current reporting system. For the past ten years, the fleet has voluntarily participated in daily reporting. Additionally, the Generic Dealer Reporting Amendment in 2014, and updated with Framework Amendment 3 in 2016, implemented mandatory dealer reporting and validation. The preferred option would also eliminate the need for vessels to return to port and unload by 5:00 pm on Friday to avoid the harvest restriction.

This action is not expected to result on an increase in effort due to the current endorsement moratorium and quota restriction. However, fishermen would be able to be more efficient in all fisheries they participate in as they would be able to switch back to the more profitable spiny lobster and stone crab fishery as soon as possible.

CHAPTER 2. REGULATORY IMPACT REVIEW

2.1 Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: 1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; 2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, 3) it 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 the regulations are a “significant regulatory action” under the criteria provided in Executive Order (E.O.) 12866. This RIR analyzes the impacts this action would be expected to have on the Gulf of Mexico (Gulf) king mackerel fishery, which is included in the Fishery Management Plan Coastal Migratory Pelagic (CMP) Resources in the Gulf of Mexico and Atlantic Region (CMP FMP).

2.2 Problems and Objectives

The problems and objectives addressed by this action are discussed in Section 1.2.

2.3 Description of the Fishery

Economic information pertaining to the CMP fishery and Gulf of Mexico migratory group king mackerel (Gulf king mackerel), in particular, can be found in Vondruska (2010), Framework Amendment 11 (GMFMC 2022), Framework Amendment 5 (GMFMC and SAFMC 2016b), and Amendment 26 (GMFMC and SAFMC 2016a), and is incorporated herein by reference. The following section contains select updated information on the economic environment of the Gulf king mackerel commercial gillnet component of the CMP fishery. Inflation adjusted revenues and prices are reported in 2021 dollars using the annual, non-seasonally adjusted Gross Domestic Product (GDP) implicit price deflator provided by the U.S. Bureau of Economic Analysis.

2.3.1 Commercial Sector

Permits

Any fishing vessel that harvests king mackerel from Atlantic and Gulf Federal waters must have a valid limited access commercial king mackerel permit. A separate and additional valid limited access commercial king mackerel gillnet endorsement is required to harvest the species using a run-around gillnet in the Gulf migratory group Southern zone. The number of valid or

renewable¹ king mackerel permits declined steadily from 2017 through 2021, whereas the number of gillnet endorsements remained mostly stable following a drop in 2018 after the implementation of Framework Amendment 3 (GMFMC 2015) which removed latent gillnet endorsements.

Table 2.3.1.1. Number of valid or renewable federal commercial king mackerel permits and gillnet endorsements.

Year	King Mackerel Permits	King Mackerel Gillnet Endorsements
2017	1,445	20
2018	1,440	17
2019	1,435	17
2020	1,426	17
2021*	1,389	16

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database (accessed 1/31/23).

*2021 data only covers through August 26, 2021.

Vessels, Landings, and Dockside Revenue

The top species harvested by king mackerel gillnet vessels in Florida, in terms of landings in pounds (lbs) landed weight² (lw) and ex-vessel revenue, are presented in Figure 2.3.1.1 and Figure 2.3.1.2. The composition of these top landed species was mostly consistent from 2017 through 2021. While king mackerel accounts for the majority of landings for these vessels, the majority of ex-vessel revenue comes from spiny lobster and stone crab as illustrated in Figure 2.3.1.2.

¹ A renewable permit is an expired limited access permit that cannot be actively fished, but can be renewed for up to one year after expiration.

² Landed weight is equivalent to “as reported.”

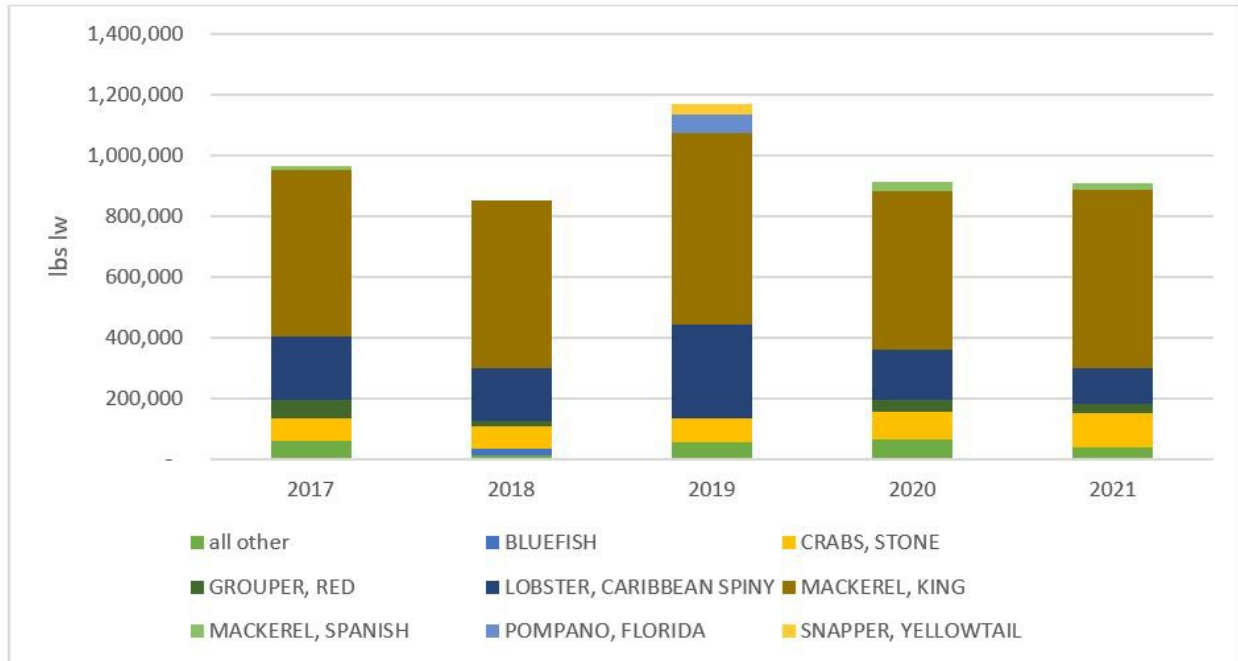


Figure 2.3.1.1. Top species harvested by king mackerel gillnet vessels in Florida in terms of landings in lbs lw.

Source: 2023 Atlantic Coastal Cooperative Statistics Program (ACCSP) data warehouse (A. Lee, ACCSP, pers. comm.).

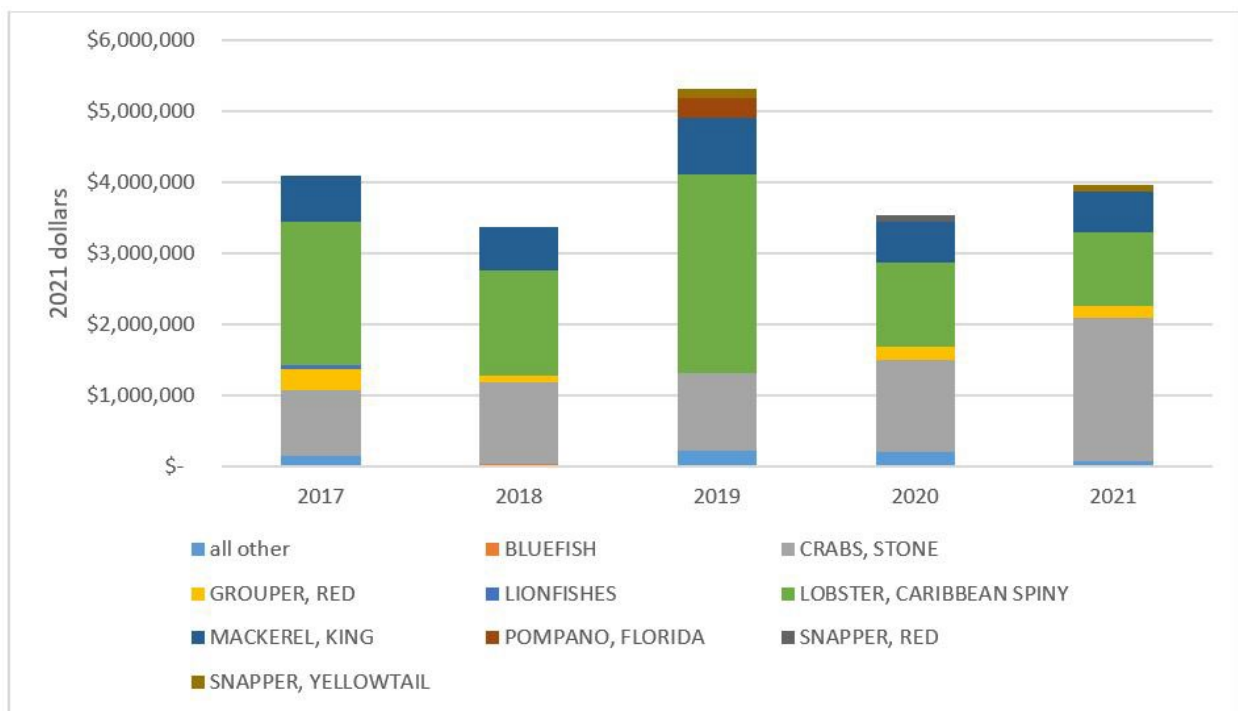


Figure 2.3.1.2. Top species harvested by king mackerel gillnet vessels in Florida in terms of ex-vessel revenue (2021 dollars).

Source: 2023 ACCSP data warehouse (A. Lee, ACCSP, pers. comm.).

The number of federally permitted commercial vessels that landed Gulf king mackerel using gillnets in the Southern Zone was mostly stable from 2017 through 2021 (Table 2.3.1.2). King mackerel gillnet landings fluctuated during the period with a peak in 2019. On average (2017 through 2021), vessels that landed king mackerel with gillnets did so on approximately 5% of their Florida trips, and these landings accounted for approximately 16% of their annual revenue from all species (Table 2.3.1.2 and Table 2.3.1.3). The average annual price per lb lw for king mackerel gillnet landings during this period was \$1.13 (2021 dollars). Although not shown in the table, the maximum annual revenue from all species reported by a single vessel that harvested king mackerel using gillnets in the Southern Zone from 2017 through 2021 was approximately \$1 million (2021 dollars) and occurred in 2019.

It is noted that some commercial fishing businesses own and operate more than one vessel. On average from 2017 through 2021, there were 13 commercial fishing businesses identified that had Gulf king mackerel gillnet landings. During this time, these businesses earned an average annual revenue of approximately \$637,000 (2021 dollars), and king mackerel gillnet landings accounted for approximately 8% of this revenue. The maximum annual revenue from all species reported by a single one of these commercial fishing businesses from 2017 through 2021 was approximately \$2 million (2021 dollars) and occurred in 2017.

Table 2.3.1.2. Number of vessels, number of trips, and landings (lbs lw) by year for the Gulf king mackerel gillnet component.

Year	# of vessels with king mackerel gillnet landings (> 0 lbs lw)	# of trips with king mackerel gillnet landings	king mackerel gillnet landings (lbs lw)	Other species landings jointly caught w/ king mackerel (lbs lw) on gillnet trips	# of FL trips w/o king mackerel gillnet landings	All species landings on FL trips w/o king mackerel gillnet landings (lbs lw)
2017	16	31	538,213	3,146	579	425,085
2018	13	23	552,775	2,329	348	297,404
2019	14	22	631,211	0	731	540,221
2020	15	26	521,318	0	528	392,580
2021	13	23	587,320	0	403	322,391
Average	14	25	566,167	1,095	518	395,536

Source: 2023 ACCSP data warehouse (A. Lee, ACCSP, pers. comm.).

Table 2.3.1.3. Number of vessels and ex-vessel revenues by year (2021 dollars) for the Gulf king mackerel gillnet component.

Year	# of vessels with king mackerel gillnet landings (> 0 lbs lw)	Dockside revenue from king mackerel gillnet landings	Dockside revenue from other species landings jointly caught w/ king mackerel on gillnet trips	Dockside revenue from all species landings on FL trips w/o king mackerel gillnet landings	Total dockside revenue	Average total dockside revenue per vessel
2017	16	\$624,578	\$5,095	\$3,452,136	\$4,081,809	\$255,113
2018	13	\$625,616	\$625	\$2,746,749	\$3,372,989	\$259,461
2019	14	\$798,658	\$0	\$4,516,827	\$5,315,485	\$379,678
2020	15	\$572,164	\$0	\$2,963,504	\$3,535,667	\$235,711
2021	13	\$586,326	\$0	\$3,373,023	\$3,959,349	\$304,565
Average	14	\$641,468	\$1,144	\$3,410,448	\$4,053,060	\$286,906

Source: 2023 ACCSP data warehouse (A. Lee, ACCSP, pers. comm.).

Liese and Overstreet (2021) provide annual vessel-level estimates of costs (as a percentage of revenue) and net revenue from operations for vessels that harvested king mackerel in the Gulf and South Atlantic from 2016 through 2018 (Table 2.3.1.4). Estimates of producer surplus (PS) can be calculated from the cost information. PS is total annual revenue minus the costs for fuel, other supplies, hired crew, and the opportunity cost of an owner’s time as captain. Net revenue from operations, which most closely represents economic profits to the owner(s), is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner’s time as captain, as well as the vessel’s depreciation. Loan Payments and Individual Fishing Quota (IFQ) purchases, although included in Table 2.3.1.4, are excluded from these calculations because they are treated as transfer payments. According to Liese and Overstreet (2021), PS for commercial vessels that harvested king mackerel in the Gulf was 45.3% of their annual gross revenue, on average, from 2016 through 2018. Net revenue from operations was 21.6% of their average annual gross revenue during this period. For commercial vessels that harvested king mackerel in the South Atlantic, PS was 38.4% of their annual gross revenue, on average, from 2016 through 2018. Net revenue from operations was 4.4% of their average annual gross revenue during this period. There are no estimates specific to the vessels affected by this action, which are likely to take trips in both the Gulf and South Atlantic jurisdictional waters. Therefore, the Gulf and South Atlantic PS and net revenue from operations percentages provided may serve as a range for these affected vessels. Applying these percentages to the results provided in Table 2.3.1.3 would result in an estimated per vessel average annual PS that ranges from \$110,172 (2021 dollars) to \$129,681 and an average annual net revenue from operations that ranges from \$12,624 to \$61,972 per year.

Table 2.3.1.4. Annual average costs as a percentage of gross revenue for vessels that harvested king mackerel in the Gulf and South Atlantic from 2016 through 2018.

Cost Category	% of Revenue for vessels with king mackerel landings in Gulf waters	% of Revenue for vessels with king mackerel landings in South Atlantic waters
Fuel	8.9%	12.4%
Other Supplies	11.9%	13%
Hired Crew	22.6%	20%
Vessel Repair & Maintenance	11.5%	15.9%
Insurance	0.01	2.3%
Overhead	6.5%	9.3%
Loan Payment	1.4%	3.5%
IFQ Purchase	5.5%	0.1%
Opportunity Cost of Owner-Captain Time	11.4%	16.2%
Vessel Depreciation	4.6%	6.5%

Source: Liese and Overstreet (2021).

Imports

Imports of seafood products compete in the domestic seafood market and have dominated many segments of the seafood market. Imports affect the price for domestic seafood products and tend to set the price in the market segments in which they dominate. Seafood imports have downstream effects on the local fish market. At the harvest level for mackerel species, imports affect the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to the domestic production of mackerel species, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. The following describes the imports of fish products that directly compete with the domestic harvest of mackerel species. Imports data for king mackerel, in particular, are not available.

Ninety-six and a half percent of mackerel imports,³ on average (2017 through 2021), were comprised of frozen or prepared/preserved fish;⁴ the remaining 3.5% were fresh. Imports of mackerel increased steadily from 60.6 million lbs product weight (pw) in 2017 to 69.1 million lbs pw in 2020, then decreased slightly to 68.3 million lbs pw in 2021. During the period, total revenue from mackerel imports ranged from approximately \$81.5 million (2021 dollars) to \$95.7 million. The average annual price per lb pw fluctuated from 2017 through 2021 with a range of \$1.34 (2021 dollars) to \$1.44. Imports of mackerel primarily originated in China, Norway, and

³ NOAA Fisheries Service purchases fisheries trade data from the Foreign Trade Division of the U.S. Census Bureau. Data are available for download at <http://www.st.nmfs.noaa.gov/st1/trade/index.html>.

⁴ Includes dried, salted and smoked mackerel.

Thailand, and to a lesser extent, South Korea, Vietnam, and Chile. These imports primarily entered the U.S. through the ports of New York, Los Angeles, and Baltimore. Mackerel imports were highest on average (2017 through 2021) during the months of January, November, and December.

Business Activity

The commercial harvest and subsequent sales and consumption of fish generate business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as king mackerel purchased at a local fish market and served during restaurant visits. 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, such as other finfish or seafood products, and services, such as visits to different food service establishments. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic effects may be distributed through regional markets and should not be interpreted to represent the impacts if this species is not available for harvest or purchase.

Estimates of the U.S. average annual business activity associated with the commercial harvest of king mackerel using gillnets in the Southern Zone were derived using the model developed for and applied in NMFS (2022) and are provided in Table 2.3.1.5.⁵ This business activity is characterized as jobs (full- and part-time), output impacts (gross business sales), income impacts (wages, salaries, and self-employed income), and value-added impacts, which represent the contribution made to the U.S. GDP. These impacts should not be added together because this would result in double counting. The results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models to address individual species are not available. For example, the results provided here apply to a general “reef fish” category rather than just king mackerel, and a harvester job is “generated” for approximately every \$35,200 (2021 dollars) in ex-vessel revenue. These results contrast with the number of harvesters (vessels) with recorded gillnet landings of king mackerel presented in Table 2.3.1.2.

⁵A detailed description of the input/output model is provided in NMFS (2011).

Table 2.3.1.5. Average annual business activity (2017 through 2021) associated with the commercial gillnet harvest of Gulf king mackerel in the Southern Zone. All monetary estimates are in 2021 dollars.

Species	Average Ex-vessel Value (\$ thousands)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (\$ thousands)	Income Impacts (\$ thousands)	Value Added (\$ thousands)
Gulf king mackerel harvested by gillnets	\$641	77	18	\$6,361	\$2,336	\$3,301

Source: Calculated by NMFS Southeast Regional Office (SERO) using the model developed for and applied in NMFS (2022).

2.4 Impacts of Management Measures

The proposed action modifies the fishing season for the king mackerel gillnet fishery in the Gulf by removing the weekend and holiday closure, and it would be expected to affect 16 valid or renewable king mackerel gillnet endorsements, which is the number of endorsements in 2021. Economic analysis of the net benefits from the proposed action is comprised of both the resulting costs and benefits. Since the option would relax an existing regulation that imposes a weekend and holiday closure, the Gulf king mackerel gillnet component would not be expected to bear any costs. As a result, the remaining analysis focuses on the expected benefits. This option provides benefits in two primary ways. First, fuel costs are expected to be reduced as vessels would not be required to return to the docks for weekends and holidays. Second, it is currently inefficient for operators in the king mackerel gillnet fishery in the Gulf to switch gear types on weekends and holidays to harvest other fisheries, such as stone crab and spiny lobster. Under the proposed action, the season for gillnet landings may end earlier than in previous years, thereby allowing operators to switch gear types sooner and attempt to increase their harvest and revenue in the stone crab and spiny lobster fisheries. As noted in Figure 2.3.1.2, the majority of ex-vessel revenue comes from spiny lobster and stone crab, which highlights that these operators are primarily dependent economically on these fisheries. Therefore, additional economic benefits, while not quantifiable with available data, are expected from this proposed action.

In comparing the non-quantifiable benefits from Section 2.4 with the quantifiable costs from Section 2.5, the net benefits from the proposed action are expected to be positive. This is due to the costs in Section 2.5 being relatively minor and only occurring during the development of the proposed action, whereas the benefits in Section 2.4 would occur on an annual basis for vessels that are switching between the Gulf king mackerel gillnet component to the stone crab and spiny lobster fisheries.

2.5 Public and Private 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 Section 2.4.

Estimated public costs associated with this action include:

Council costs of document preparation, meetings, public hearings, and information dissemination.....	\$11,831
NMFS administrative costs of document preparation, meetings and review	\$13,057
TOTAL	\$24,888

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. Council and NMFS administrative costs directly attributable to this amendment and the rulemaking process will be incurred prior to the effective date of the final rule implementing this amendment.

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 E.O. Based on the information in Sections 2.4-2.5, the costs and benefits resulting from this regulatory action are not expected to meet or exceed the \$100 million threshold, and thus this action has 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 impacts of various alternatives contained in the fishery management plan (FMP) or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

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 impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is primarily conducted to determine whether the proposed action would have a significant economic impact on a substantial number of small entities. 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 rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, 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; 6) a description and estimate of the expected economic impacts on small entities; and 7) a description of the significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities.

3.2 Statement of the need for, objective of, and legal basis for the proposed action

The need for and objective of this proposed action are provided in Chapter 1. In summary, there is a need to remove an outdated regulatory requirement that is no longer necessary to manage harvest by the Gulf of Mexico (Gulf) migratory group king mackerel gillnet component of the Coastal Migratory Pelagics (CMP) fishery. The objective of this proposed action is to allow the Gulf king mackerel gillnet component to continue to fish from the season start date until the National Marine Fisheries Service (NMFS) determines that the gillnet quota has been met. The Magnuson-Stevens Fishery Conservation and Management Act provides the statutory basis for this proposed action.

3.3 Description and estimate of the number of small entities to which the proposed action would apply

This proposed action, if implemented, would remove the weekend and holiday closure for the Gulf migratory group king mackerel gillnet component of the CMP fishery and would apply to all federally-permitted commercial vessels that fish for or harvest Gulf king mackerel using gillnets in the Gulf Southern Zone (Figure 1.1.1.). It would not directly apply to federally-permitted dealers. Any change in the supply of king mackerel available for purchase by dealers as a result of this proposed regulatory action, and associated economic effects, would be an indirect effect of the proposed regulatory action and would therefore fall outside the scope of the RFA.

During 2021, there were a total of 1,389 valid or renewable federal commercial king mackerel permits and 16 king mackerel gillnet endorsements. On average from 2017 through 2021, there were 14 federally-permitted commercial vessels with reported landings of Gulf king mackerel using gillnets in the Southern Zone. Their average annual vessel-level gross revenue from all species for 2017 through 2021 was \$286,906 (2021 dollars), and Gulf king mackerel harvested with gillnets accounted for approximately 16% of this revenue. For commercial vessels that harvest Gulf king mackerel using gillnets in the Southern Zone, economic profits are estimated to range from \$12,624 to \$61,972 (4.4% to 21.6% of annual gross revenue), on average. The maximum annual revenue from all species reported by a single vessel that harvested Gulf king mackerel with gillnets from 2017 through 2021 was approximately \$1 million (2021 dollars). It is important to note that some commercial fishing businesses own and operate more than one vessel. On average from 2017 through 2021, there were 13 commercial fishing businesses identified that had Gulf king mackerel gillnet landings. During this time, these businesses earned an average annual revenue of approximately \$637,000 (2021 dollars), and king mackerel gillnet landings accounted for approximately 8% of this revenue. The maximum annual revenue from all species reported by a single one of these commercial fishing businesses from 2017 through 2021 was approximately \$2 million (2021 dollars).

For RFA purposes only, NMFS has established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (see 50 CFR § 200.2). A business primarily engaged in commercial fishing (NAICS code 11411) is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of \$11 million for all its affiliated operations worldwide. All of the commercial fishing businesses directly regulated by this proposed action are believed to be small entities based on NMFS size standard. No other small entities that would be directly affected by this action have been identified.

3.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed action including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records

This proposed action would not establish any new reporting, record-keeping, or other compliance 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 criterion

There are 16 federally permitted vessels eligible to commercially fish for or harvest Gulf king mackerel using gillnets in the Southern Zone. However, it is expected that those vessels that historically landed king mackerel with gillnets would be the most likely to be affected by this proposed action. From 2017 through 2021, there were 14 federally permitted commercial vessels, on average, that harvested and sold Gulf king mackerel gillnet landings each year. Because all of these vessels are believed to be small entities, it is assumed that this action would affect a substantial number of small entities.

Significant economic impacts

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?

All entities likely to be affected by this action are believed to be small entities, and thus the issue of disproportionality does not arise.

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

A detailed analysis of the economic effects associated with this proposed action can be found in Chapter 2. The following information summarizes that analysis and, additionally, analyzes the effects of this proposed action on the profitability of small entities.

This proposed action would modify the fishing season for the Gulf king mackerel gillnet component of the CMP fishery by removing the weekend and holiday closure. The removal of this closure would be expected to reduce fuel costs as vessels would no longer be required to return to the docks for weekends and holidays. It would also allow these vessels to prosecute the Gulf king mackerel Southern Zone gillnet quota in a more timely and efficient manner, allowing operators to switch gear types sooner and attempt to increase their harvest and revenue in the stone crab and spiny lobster fisheries. Overall, these improvements in efficiency have the potential to increase economic profits for the affected small entities; however, these economic effects cannot be quantified with existing data.

In summary, this proposed action would not be expected to have a significant economic impact on a substantial number of small entities.

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 action, if implemented, would not be expected to have a significant economic impact on a substantial number of small entities. As a result, the issue of significant alternatives is not relevant.

CHAPTER 4. LIST OF PREPARERS AND REVIEWERS

PREPARERS

Name	Expertise	Responsibility	Agency
Natasha Méndez-Ferrer	Fishery Biologist	Co-Team Lead – Amendment development	GMFMC
Kelli O’Donnell	Fishery Biologist	Co-Team Lead – Amendment development	SERO
Matthew Freeman	Economist	Economic analyses	GMFMC
David Records	Economist	Economic analyses	SERO
Michael Larkin	Fishery Biologist	Data analyses	SERO

REVIEWERS (Preparers also serve as reviewers)

Name	Expertise	Responsibility	Agency
Mara Levy	Attorney	Legal review	NOAA GC
Carrie Simmons	Executive Director	Review	GMFMC
Peter Hood	Branch Chief	Review	SERO
John Froeschke	Deputy Director	Review	GMFMC
Scott Sandorf	Technical Writer and Editor	Regulatory writer	SERO
Manny Antonaras	Deputy Special Agent in Charge	Law Enforcement compliance	NOAA OLE
David Dale	Fishery Biologist	Habitat compliance	SERO
Ryan Rindone	Fishery Biologist	Review	GMFMC
Dominique Lazarro	Data Analyst	Review	SERO
Jennifer Lee	Fishery Biologist	Protected Resources compliance	SERO
Michael Travis	Economist	Review	SERO
Jashira Torres	Fishery Biologist	Protected Resources Compliance	SERO
Matthew Walia	Compliance Liaison Analyst	Law Enforcement compliance	NOAA OLE
Juan Agar	Economist	Review	SEFSC
Katie Siegfried	Branch Chief	Review	SEFSC

GMFMC = Gulf of Mexico Fishery Management Council; NOAA GC = National Oceanic and Atmospheric Administration General Counsel; SEFSC = Southeast Fisheries Science Center; SERO = Southeast Regional Office of the National Marine Fisheries Service.

CHAPTER 5. REFERENCES

GMFMC. 1999. Framework seasonal adjustment of harvest levels and procedures under the fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic region including environmental assessment, regulatory impact review. Gulf of Mexico Fishery Management Council, Tampa, Florida. 53 pp.

https://gulfcouncil.org/wp-content/uploads/CMP-Regulatory-Amendment-1999-07-1_508Compliant.pdf

GMFMC. 2015. Final framework amendment 3 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic, including environmental assessment, regulatory impact review, and regulatory flexibility act analysis: Modifications to commercial king mackerel gillnet trip limits, accountability measures, and electronic reporting requirements, and elimination of latent gillnet permits in the Gulf of Mexico.

Gulf of Mexico Fishery Management Council. Tampa, Florida. 81 pp. <http://gulfcouncil.org/wp-content/uploads/FINAL-Framework-Amendment-3-to-Modify-KM-GN-Trip-Limits-AMs-and-Permits-072815.pdf>

GMFMC. 2022. Final framework amendment 11 under the fishery management plans for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic region: Modification to the Gulf of Mexico group king mackerel catch limits, including environmental assessment, regulatory impact review and regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. 110 pp.

[Modifications to the Gulf of Mexico Migratory Group King Mackerel CMP 11 \(gulfcouncil.org\)](https://gulfcouncil.org/wp-content/uploads/Modifications-to-the-Gulf-of-Mexico-Migratory-Group-King-Mackerel-CMP-11.pdf)

GMFMC and SAFMC. 1996. Amendment 8 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and South Atlantic, includes environmental assessment, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida; South Atlantic Fishery Management Council. Charleston, South Carolina. 106 pp.

https://gulfcouncil.org/wp-content/uploads/MAC-Amendment-8-Final_08-96_Searchable-1.pdf

GMFMC and SAFMC. 1998. Amendment 9 to the fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic including environmental impact statement, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida and South Atlantic Fishery Management Council. North Charleston, South Carolina. 77 pp.

https://gulfcouncil.org/wp-content/uploads/CMP-Amend-09-Final-1998-11-1_508Compliant.pdf

GMFMC and SAFMC. 2013. Final generic amendment to the fishery management plans in the Gulf of Mexico and South Atlantic regions, including environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis: Modifications to federally permitted seafood dealer reporting requirements. Gulf of Mexico Fishery Management Council. Tampa, Florida; South Atlantic Fishery Management Council. North Charleston, South Carolina. 161 pp.

[Microsoft Word - Generic Dealer Reporting Amendment 9-25-13\(3\) \(gulfcouncil.org\)](#)

GMFMC and SAFMC. 2016a. Amendment 26 to the fishery management plan for the coastal migratory pelagics fishery of the Gulf of Mexico and Atlantic region: Changes in allocations, stock boundaries and sale provisions for Gulf of Mexico and Atlantic migratory groups of king mackerel. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, North Charleston, South Carolina. 254 pp.

<https://gulfcouncil.org/wp-content/uploads/Final-CMP-Amendment-26-070816.pdf>

GMFMC and SAFMC. 2016b. Final framework amendment 5 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic region: Modifications to commercial permit restrictions for king and Spanish mackerel. Gulf of Mexico Fishery Management Council, Tampa, Florida; and South Atlantic Fishery Management Council, North Charleston, South Carolina. 102 pp. [https://gulfcouncil.org/wp-content/uploads/FISHERY%20MANAGEMENT/COASTAL%20MIGRATORY%20PELAGIC S/Framework%20Amendment%205_12-02-16_FINAL.pdf](https://gulfcouncil.org/wp-content/uploads/FISHERY%20MANAGEMENT/COASTAL%20MIGRATORY%20PELAGIC%20S/Framework%20Amendment%205_12-02-16_FINAL.pdf)

Liese, C., and E. Overstreet. 2021. Economics of the U.S. South Atlantic and Gulf of Mexico king mackerel and Spanish mackerel fisheries -2018. NOAA Technical Memorandum NMFS-SEFSC-752. 61 pp.

NMFS. 2011. A users guide to the national and coastal state I/O Model.

www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf NMFS. Silver Spring, Maryland. 39 pp.

NMFS. 2022. Fisheries economics of the United States, 2019. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-229A, 248 pp.

[Fisheries Economics of the United States 2019 \(noaa.gov\)](https://www.nmfs.gov/fisheries-economics-of-the-united-states-2019)

Vondruska, J. 2010. Fishery analysis of the commercial fisheries for eleven coastal migratory pelagic species. SERO-FSSB-2010-01. National Marine Fisheries Service, Southeast Regional Office. St. Petersburg, Florida. 67 pp.