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Modifications to Deep-water Grouper Management Measures

Final Amendment 58B to the Fishery Management Plan for Reef Fish Resources of the Gulf

Including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

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The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service Southeast Regional Office and the Council prepared this Environmental Assessment (EA) for Amendment 58B to the Fishery Management Plan for the Reef Fish Resources of the Gulf (EAXX-006-48-1SE-1769029464) in compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.) and NOAA's Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities: Companion Manual for NOAA Administrative Order 216-6A (June 30, 2025).

Certifications

NOAA has considered the factors mandated by NEPA and has determined that the EA represents NOAA's good-faith effort to prioritize documentation of the most important considerations required by the statute within the congressionally mandated page limits. This prioritization reflects NOAA's expert judgment and any considerations addressed briefly or left unaddressed were, in NOAA's judgment, comparatively not of a substantive nature that meaningfully informed the consideration of environmental effects and the resulting decision on how to proceed.

The resulting EA also represents NOAA's good-faith effort to fulfill NEPA's requirements within the congressionally mandated timeline. The EA is substantially complete, and, in NOAA's expert opinion, the agency has thoroughly considered the factors mandated by NEPA. In NOAA's judgment, the analysis contained herein is adequate to inform and reasonably explain NOAA's final decision regarding the proposed activity or decision.

ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ALS	accumulated landings system
AM	accountability measures
APAIS	Access Point Angler Intercept Survey
BiOp	biological opinion
BSIA	best scientific information available
CFpA	net cash flow per angler
CFR	code of federal regulations
Council	Gulf Council
Councils	Gulf and South Atlantic Fishery Management Councils
CS	consumer surplus
DPS	distinct population segments
DWG	deep-water grouper
E.O.	Executive Order
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	Essential Fish Habitat
EIS	economic impact statement
ESA	Endangered Species Act
FES	Fishing Effort Survey
FL	fork length
FMP	Fishery Management Plan
FMSY	maximum sustainable yield
GDP	gross domestic product
GMFMC	Gulf of Mexico Fishery Management Council
GSAD	Gulf and South Atlantic Dealers
GT	grouper-tilefish
Gulf	Gulf of America (Formerly Gulf of Mexico)
gw	gutted weight
HAPC	habitat areas of particular concern
IFQ	individual fishing quota
IRFA	initial regulatory flexibility analysis
LA Creel	Louisiana Department of Wildlife and Fisheries' recreational creel survey
LQ	local quotient
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammals Protection Act

mp	million pounds
MRFSS	Marine Recreational Fishery Statistics Survey
MRIP	Marine Recreational Information Program
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OMB	Office of Management and Budget
Other SWG	Other Shallow-water Grouper complex
OY	optimum yield
PAH	polycyclic aromatic hydrocarbons
PS	producer surplus
Reef Fish FMP	Fishery Management Plan for the Reef Fish Resources in the Gulf
RFA	Regulatory flexibility analysis
RFFA	reasonably foreseeable future actions
RIR	Regulatory Impact Review
RQ	regional quotient
SDC	status determination criteria
Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SEIS	Supplemental Environmental Impact Statement
SERO	Southeast Regional Office
SMZ	special management zone
SPR	spawning potential ratio
SRHS	Southeast Regional Headboat Survey
SSB	spawning stock biomass
SSC	Scientific and Statistical Committee
SSRG	Social Scientists Research Group
SWG	shallow-water grouper
TNR	trip net revenue
TPWD	Texas Parks and Wildlife Department
VMS	vessel monitoring system
WTP	willingness-to-pay
ww	whole weight

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FISHERY IMPACT STATEMENT

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that a fishery impact statement (FIS) be prepared for all amendments to fishery management plans. The FIS contains: 1) an assessment of the likely biological, economic, and social effects of the conservation and management measures on fishery participants and their communities; 2) an assessment of any effects on participants in the fisheries conducted in adjacent areas under the authority of another Fishery Management Council; and 3) the safety of human life at sea. Detailed discussion of the expected effects for all proposed changes is provided in Chapter 4. The FIS provides a summary of these effects.

The Southeast Data, Assessment, and Review (SEDAR) 85 (2023) assessment was completed using updated recreational data from the Marine Recreational Information Program (MRIP) Access Point Angler Intercept Survey (APAIS) and Fishing Effort Survey (FES), which collectively estimated greater catch and effort data for the recreational sector than previously calculated. The Gulf Council's (Council) Scientific and Statistical Committee (SSC) concluded that the SEDAR 85 (2023) assessment represented the best scientific information available (BSIA). The SSC also provided overfishing limit (OFL) and acceptable biological catch (ABC) recommendations to the Council. The revised catch limits specified in Amendment 58B to the Fishery Management Plan for the Reef Fish Resources of the Gulf (Reef Fish FMP) are expected to prevent overfishing of yellowedge grouper and allow for sustainable harvest of the deep-water grouper (DWG) complex as a whole.

Amendment 58B considers three actions. Action 1 contains alternatives that would modify the DWG complex maximum sustainable yield (MSY) proxy, OFL, ABC, and complex annual catch limit (ACL). **Preferred Alternative 2** would revise the catch limits for the DWG complex based on the SEDAR 85 stock assessment for yellowedge grouper and Tier 3b of the Council's ABC Control Rule for the other three DWG species. The DWG complex OFL would be 731,035 pounds (lb) gutted weight (gw), and the ABC would be 555,026 lb gw. The complex ACL would be set equal to the ABC. **Preferred Alternative 2** would also change the MSY proxy for the DWG complex from the yield when fishing at a fishing mortality rate (F) that produces a spawning potential ratio (SPR) of 30 percent for the DWG complex ($F_{30\%SPR}$) to be the yield when fishing at $F_{40\%SPR}$, based on the SSC's recommendations for yellowedge grouper and the similarities between the species in the DWG complex with respect to their life histories.

Action 2 would modify the sector ACLs and sector allocation for the DWG complex. **Preferred Alternative 3** would establish a recreational ACL and sector allocation based on the average recreational landings from the most recent five years (2019 – 2023). This time period includes 2020, during which the COVID-19 pandemic resulted in various effects on fishing effort and landings. However, there is no clear effect on DWG landings during 2020. Since overall commercial fishing effort and landings per trip are similar to surrounding years (e.g., 2018 - 2019, 2021 - 2022). In the absence of a quantitative reason for excluding 2020, those data were included here. The recreational ACL would equal 56,668 lb gw, or approximately 10.21% of the DWG complex ACL. The commercial ACL would equal 498,358 lb gw, or approximately

89.79% of the DWG complex ACL. The commercial quota is reduced from the commercial ACL by 4% and is set at 478,424 lb gw.

Action 3 would modify the DWG complex recreational accountability measures (AM). **Preferred Alternative 4** would revise the post-season AM for the recreational sector such that if the average recreational DWG landings exceed the average recreational ACL, and the average DWG complex ACL is exceeded over a three-year moving period, the Regional Administrator would reduce the duration of the recreational season by the amount necessary to ensure that the recreational ACL is not exceeded during the following fishing year unless the National Marine Fisheries Service (NMFS) determines based upon BSIA that no adjustment to the recreational fishing season is necessary.

Biological Effects

Action 1, **Preferred Alternative 2** would redefine the F_{MSY} proxy for DWG at a more conservative level of $F_{40\%SPR}$, which results in a reduction of DWG yield. **Preferred Alternative 2** would also reduce the DWG complex OFL, ABC, and complex ACL. This alternative is not expected to have substantial impacts on the biological environment; however, these measures are expected to improve the health of the DWG complex stock. The multi-species nature of the reef fish fishery is expected to be maintained, and therefore the manner in which the fishery is prosecuted is not expected to change.

Action 2, **Preferred Alternative 3** is expected to have greater biological benefits than the status quo because it would establish a recreational ACL, which is necessary to implement an effective recreational AM in Action 3. Because Action 2 alternatives assume that the complex ACL set in Action 1 is implemented, realized differences in annual harvests between these alternatives are only expected based on the ability of NMFS to constrain recreational harvest to the catch limits set in this action. Given the high variability in DWG recreational landings estimates, it is expected that the higher recreational ACL in **Preferred Alternative 3** would be more likely to constrain recreational landings and is more beneficial to the biological environment than status quo management, since it is expected to improve the health of the DWG complex stock. However, any impacts to this or other aspects of the biological environment, included effects on Endangered Species Act-listed species and critical habitat, are expected to be minor because modifications to the DWG catch limits would not change the fishing methods used or change the way in which the reef fish fishery as a whole is prosecuted.

Action 3, **Preferred Alternative 4** would be triggered based on whether the average recreational DWG landings exceed the recreational ACL and the complex ACL over a three-year moving period. Thus, both the recreational ACL and complex ACL could be exceeded in a fishing year without triggering the AM in the following year, so long as the three-year average does not exceed the recreational and complex ACL, respectively. While the short-term impacts and biological effects are difficult to predict under **Preferred Alternative 4**, long-term biological effects of **Preferred Alternative 4** are expected to be positive for the DWG complex stock and are expected to be minor to other aspects of the biological environment, because it would not change the fishing methods used or change the way in which the reef fish fishery as a whole is prosecuted.

Economic Effects

The revised MSY and OFL being considered in **Action 1** for the DWG complex are based on the Council's SSC's current recommendations. This proposed regulatory action would revise the DWG complex MSY proxy from the yield when fishing is at $F_{30\%SPR}$ to the yield when fishing is at $F_{40\%SPR}$. The proposed regulatory action would also revise the DWG complex OFL from 1.113 million pounds (mp) gw to an OFL of 731,035 pounds (lb) gw. Revising the MSY proxy and OFL for the DWG complex would not directly alter the current harvest or use of the resource. Since there would be no direct effects on resource harvest or use, there would be no direct economic effects from Action 1's changes to the DWG complex's MSY proxy or OFL on fishery participants, associated industries, or communities. However, benefits or impacts may result indirectly from the revised MSY proxy and OFL if changes in catch limits or management regulations occur.

The revised ABC being considered in **Action 1** controls the overall ACL amount, thus indirectly affecting the total amount of fish available for harvest. As such, modifying the DWG complex ABC from 1.105 mp gw to an ABC of 555,026 lb gw would significantly reduce harvest opportunities from the status quo, largely due to the decrease in the ACL. Consequently, the anticipated indirect economic effects of Action 1's change to the DWG complex ABC would be a decrease overall to net economic benefits for all sectors. In general, ACLs that allow fewer fish to be landed can result in decreased net economic benefits.

The revised ACLs being considered in **Action 1** set the total amount of fish available for harvest. **Action 1** would revise the DWG complex ACL to be equal to the ABC of 555,026 lb gw. Under the status quo commercial sector allocation of 96.50%, the proposed total ACL would result in a commercial ACL of 535,600 lb gw and a commercial quota, as reduced 4% from the commercial ACL, of 514,176 lb gw. This change is expected to result in an estimated reduction in commercial landings of 232,054 lb gw per year. The recreational ACL is currently unspecified. As discussed below, **Action 2** would also modify commercial and recreational allocation percentages and sector ACLs, and therefore, economic effects to the commercial and recreational sectors are quantified as part of that discussion.

Action 2 would revise the commercial sector allocation from 96.50% to approximately 89.7%. When combined with **Action 1**, this would result in a commercial ACL of 498,358 lb gw and a commercial quota, as reduced 4% from the commercial ACL, of 478,424 lb gw. Relative to average historical landings from 2018-2023, excluding 2020, this would result in an estimated reduction in landings of 267,806 lb gw per year and a decrease of $1,330,762 (2024 dollars) in annual ex-vessel revenue for the commercial sector. The average commercial DWG vessel would experience a decrease of $9,178 in ex-vessel revenue and $3,662 in economic profits (approximately 3% of average annual ex-vessel revenue). Multiplying 53.7% by the expected change in total annual commercial revenue gives the expected change in commercial producer surplus (PS) from the new commercial ACL**,** which is estimated to be -$714,619 (2024 dollars).

Action 2 would also establish a recreational sector allocation of 10.21%, which when combined with **Action 1**, would result in a recreational ACL of 56,668 lb gw. This new recreational ACL is expected to decrease recreational landings of DWG by 892 fish (approximately 8,728 lb gw),

relative to the status quo. Multiplying the decrease of 892 fish by the estimated mean willingness-to-pay per fish value of $131 provides the expected change in consumer surplus (CS) for the recreational sector, which is estimated to be -$116,789 (2024 dollars). The total expected change in net economic benefits (CS+PS) for both the recreational and commercial sectors combined resulting from **Action 1** and **Action 2** is estimated to be -$831,408 (2024 dollars).

In **Action 3**, no economic effects to the commercial sector are expected as this action addresses the recreational AMs for the DWG complex. Under **Preferred Alternative 4,** so long as the complex ACL is not exceeded in a three-year moving period, the AM would not be triggered if the recreational ACL is exceeded. Therefore, since it is unlikely that a closure of the recreational sector would occur under Preferred Alternative 4, it is expected that it would have similar economic effects relative to Alternative 1 (no action).

Social Effects

Under Action 1, **Preferred Alternative 2** would implement updated catch limits using MRIP-FES data and updated stock assessment results. **Preferred Alternative 2** would reduce allowable harvest by approximately 50% relative to **Alternative 1** and is likely to constrain fishing opportunities for all users. Commercial operators, particularly those heavily invested in DWG individual fishing quota (IFQ) shares, may experience reduced revenue and operational flexibility. **Preferred Alternative 2** aligns with scientific recommendations and aims to prevent overfishing, it introduces near-term constraints but is expected to provide long-term social benefits as compared to **Alternative 1** as it is expected to grow the stock size over time consistent with the management objectives for the complex.

In Action 2, the reduction in catch limits is generally expected to result in negative social effects for both fishing sectors, but in particular for the commercial sector. This is due in large part to the amount of quota available to the commercial fishermen being reduced by at least approximately 50%. Further reallocation under some alternatives in Action 2 may further exacerbate these expected negative social effects. **Preferred Alternative 3** would increase the recreational share to 10.21% based on recent recreational landings data (2019–2023), potentially improving perceptions of fairness among the recreational sector but reducing the commercial allocation. The additional allocation to the recreational sector measurably increases the fishing season duration, benefitting for-hire operators and widening public access across multiple Gulf states. This alternative disperses benefits more broadly due to the general distribution of recreational fishing effort and reduces dependence risk in single-species ports. However, negative social effects would be expected to be greatest for the commercial sector under **Preferred Alternative 3**, as it would reduce the commercial quota most of the alternatives proposed in Action 2. Implementation of **Preferred Alternative 3** would require adaptation by IFQ participants, who may face reduced allocations and fewer crew working days and may lead to changes in commercial participants' sense of place in ports most vulnerable to the proposed catch reductions. Recreational users may need to adjust expectations for access or trip planning. Recreational users' sense of place may also be affected by sector allocation changes, especially when that sense of place is directly tied to recreational fishing opportunity or access available in a particular place. Changes in sector allocations resulting from this shift may influence

stakeholder trust and perceptions of procedural fairness, particularly where long-standing entitlements or economic investments are at stake.

Effects on Participants in the Fisheries Conducted in Adjacent Areas Under the Authority of another Fishery Management Council

The DWG stock is managed under the Council's Reef Fish FMP. Therefore, the actions of this amendment are not expected to impact fishery participants in areas adjacent to the Gulf, such as fisheries managed under the Caribbean and South Atlantic Fishery Management Councils' jurisdiction.

Effects on Safety at Sea

Recreational anglers are not expected to have additional incentives to participate in DWG fishing under adverse weather or ocean conditions as a result of the reduced complex ACL. Therefore, safety-at-sea issues are not expected to result for the recreational sector from this action.

Preferred alternatives selected in Actions 1 and 2 are not expected to provide incentives to alter commercial fishing behavior relative to safety. The DWG complex is managed under an IFQ program, under which fishermen are allotted a percentage of the quota each year that may be harvested at any time during the year. With decreased harvest available, vessel operators are not expected to accept greater risk by fishing under adverse weather or ocean conditions to harvest the DWG commercial quota.

CHAPTER 1. INTRODUCTION

1.1 Background

Several species of groupers in the Gulf of America (Gulf) are currently grouped into two complexes for management purposes: the Other Shallow-water Grouper (SWG) complex and the Deep-water Grouper (DWG) complex. Scamp (*Mycteroperca phenax*), yellowmouth grouper (*Mycteroperca interstitialis*), black grouper (*Mycteroperca bonaci*), and yellowfin grouper (*Mycteroperca venenosa*) are managed under the Other SWG complex. Yellowedge grouper (*Hyporthodus flavolimbatus*), snowy grouper (*Hyporthodus niveatus*), warsaw grouper (*Hyporthodus nigritus*), and speckled hind (*Epinephelus drummondhayi)* are managed under the DWG complex. These species were originally assigned to these complexes in the Generic Annual Catch Limits (ACL) and Accountability Measures (AM) Amendment to the Fishery Management Plans (FMP) of the Gulf (ACL/AM Amendment; GMFMC 2011a). Assignment of these species was, at the time, based on where these species occurred in the Gulf environment, and whether it was common for these species to be caught on the same fishing trips. Until recently, none of these eight species had approved peer-reviewed stock assessments available to inform their stock status[1]. In 2022, scamp and yellowmouth grouper were assessed together in Southeast, Data, Assessment and review (SEDAR) 68. SEDAR 68 was peer-reviewed, and the Gulf Council's (Council) Scientific and Statistical Committee (SSC) recommended updated status determination criteria (SDC) and catch advice for these two species. To act on these recommendations, the Council initiated work on Amendment 58 to the FMP for the Reef Fish Resources of the Gulf (Reef Fish FMP). In 2024, the SSC reviewed a stock assessment of yellowedge grouper (SEDAR 85 2023) and recommended updated SDC and catch advice for that stock. Because the Other SWG and DWG complexes are managed under the Grouper-Tilefish Individual Fishing Quota (IFQ) program, the Council originally considered modifications to the management of these species together in draft Amendment 58. In August 2024, to efficiently address necessary management modifications, the Council decided to split draft Amendment 58 into Amendment 58A, which focuses on the SWG species, and Amendment 58B (this document), which focuses on DWG species. As such, discussion of the Other SWG complex will be limited.

The DWG complex is managed under a total complex ACL. The commercial sector is apportioned 96.47% of the total complex ACL as specified in the Generic ACL/AM Amendment, and that apportionment and the associated catch limits are shown in Table 1.1.1. The commercial apportionment was implemented to allow the commercial sector to operate under the Grouper-Tilefish IFQ program (Amendment 29 to the Reef Fish FMP; GMFMC 2008b). Landings (2000 – 2023) by species for DWG are shown in Table 1.1.2. The recreational landings data used to develop the current catch limits were derived from the Marine Recreational Fisheries Statistics Survey (MRFSS). Landings including MRFSS recreational data

[1] Black grouper had last been assessed in 2010 (SEDAR 19), but an assessment attempted in 2017 (SEDAR 48) had to be terminated due to irreconcilable data issues. Thus, no assessment for informing the stock status of black grouper relative to its SDC exists.

are shown in Table 1.1.3, which is provided only for illustrative and comparative purposes. Recreational data sources used in Table 1.1.2 include the Texas Parks and Wildlife Department (TPWD) recreational creel survey, the Louisiana Department of Wildlife and Fisheries creel survey (LA Creel), the Southeast Region Headboat Survey (SRHS), and the Marine Recreational Information Program (MRIP), MRIP's Fishing Effort Survey (FES), and MRIP's For-Hire Survey. MRIP-FES includes the Access Point Angler Intercept Survey (APAIS) and the FES, and covers Florida, Alabama, and Mississippi. MRIP's For-Hire Survey gathers the effort information for the charter mode in Florida, Alabama, and Mississippi. MRFSS and MRIP-FES both generate estimates in pounds of fish, but those estimates are not directly comparable because they use different methods for estimating fishing effort. Therefore, the total landings shown in Table 1.1.2 cannot be directly compared to the complex ACL shown in Table 1.1.1. A depiction of the percentage of commercial landings attributable to each species within the DWG complex is shown in Figure 1.1.1.

Table 1.1.1. Catch limits and buffers by sector for DWG, as established in the Generic ACL/AM Amendment. Values are in millions of pounds (mp) gutted weight (gw). OFL = overfishing limit; ABC = acceptable biological catch.

Complex	Year	OFL	ABC (Complex ACL)	Comm ACL	Comm Quota	Comm Buffer	Rec ACL
DWG	2016+	1.113	1.105	1.066	1.024	4%	undefined

Table 1.1.2. Landings for DWG species by sector from 2000 – 2023. Landings are in lb gw.

	Commercial						Recreational (MRIP-FES)					
Year		Snowy Grouper	Speckled Hind	Warsaw Grouper	Yellowedge Grouper	Total Comm Landings	Snowy Grouper	Speckled Hind	Warsaw Grouper	Yellowedge Grouper	Total Rec Landings	Total Landings
2000	Pre-IFQ Years, SEFSC Commercial ACL Files (February 2024)	184,381	64,242	161,543	1,349,383	1,759,549	Confidential				13,917	1,773,466
2001		175,591	62,366	145,278	873,682	1,256,917	2,804	3,076	90,316	1,370	97,567	1,354,484
2002		134,999	48,220	217,031	925,582	1,325,832	5,763	1,413	61,520	2,159	70,855	1,396,687
2003		218,137	82,000	265,480	1,291,967	1,857,584	695	13,222	48,588	329	62,834	1,920,418
2004		180,487	101,745	176,895	1,020,564	1,479,691	3,273	25,546	89,214	1,162	119,194	1,598,885
2005		182,647	88,636	164,292	918,521	1,354,096	1,771	158	29,522	105,090	136,541	1,490,637
2006		171,616	64,620	140,662	824,952	1,201,850	1,610	42,667	84,972	2,546	131,796	1,333,646
2007		175,531	79,784	86,376	1,002,080	1,343,771	1,035	5,316	9,498	2,822	18,672	1,362,443
2008		199,782	41,187	88,622	946,423	1,276,014	2,426	958	17,434	1,252	22,069	1,298,083
2009		183,998	68,292	117,695	972,112	1,342,097	1,727	697	42,449	3,209	48,081	1,390,178
2010	Gulf IFQ Program	90,180	15,359	56,496	443,887	605,922	11,177	14,006	5,507	28,403	59,094	665,016
2011		132,971	24,925	61,661	558,908	778,465	8,108	2,419	6,621	9,461	26,609	805,074
2012		168,759	43,344	86,212	667,785	966,100	69,469	4,115	35,329	1,212	110,125	1,076,225
2013		108,689	34,922	103,074	673,349	920,034	50,297	205	18,774	6,198	75,474	995,508
2014		159,857	72,241	75,426	773,621	1,081,145	61,282	508	72,897	18,982	153,669	1,234,814
2015		108,980	55,550	55,502	735,218	955,250	12,174	778	3,636	15,669	32,258	987,508
2016		94,830	41,151	44,635	709,349	889,965	3,365	14,666	8,773	22,637	49,441	939,406
2017		87,587	51,061	44,362	677,926	860,936	2,167	345	8,969	4,139	15,619	876,555
2018		89,416	60,618	35,976	677,310	863,320	6,335	363	55,304	39,221	101,224	964,544
2019		91,430	67,082	33,590	804,558	996,660	5,401	5,665	3,225	74,516	88,807	1,085,467
2020		99,072	36,187	22,707	665,406	823,372	4,883	222	18,865	33,522	57,491	880,863
2021		91,362	41,451	17,419	681,679	831,911	11,873	288	2,216	15,286	29,663	861,574
2022		76,075	27,776	15,012	461,661	580,524	15,335	838	2,850	19,826	38,848	619,372
2023		64,877	34,297	12,056	514,547	625,777	10,362	2,856	2,906	52,314	68,438	694,215

Sources: Commercial data from SEFSC Commercial ACL Data (March 2024); SERO Catch Share Database (February 2024). Recreational data from SEFSC Recreational MRIP-FES ACL File (MRIP_FES_rec81_24wv3_23Aug24), which includes data from LA Creel and Texas.

Table 1.1.3. Landings for the DWG complex by sector from 2013 – 2023, using MRFSS data for the recreational sector. Landings are in lb gw.

Year	Total Comm Landings	Comm Quota (96% of Comm ACL)	Total Rec Landings (MRFSS)	Total Landings	DWG Complex ACL	% DWG ACL Landed
2013	920,034	1,024,000	60,773	980,807	1,105,000	88.8%
2014	1,081,145	1,024,000	81,938	1,163,083	1,105,000	105.3%
2015	955,250	1,024,000	28,065	983,315	1,105,000	89.0%
2016	889,965	1,024,000	28,589	918,554	1,105,000	83.1%
2017	860,936	1,024,000	13,765	874,701	1,105,000	79.2%
2018	863,320	1,024,000	67,123	930,443	1,105,000	84.2%
2019	996,660	1,024,000	75,513	1,072,173	1,105,000	97.0%
2020	823,372	1,024,000	32,977	856,349	1,105,000	77.5%
2021	831,911	1,024,000	30,771	862,682	1,105,000	78.1%
2022	580,524	1,024,000	44,869	625,393	1,105,000	56.6%
2023	625,777	1,024,000	33,801	659,578	1,105,000	59.7%

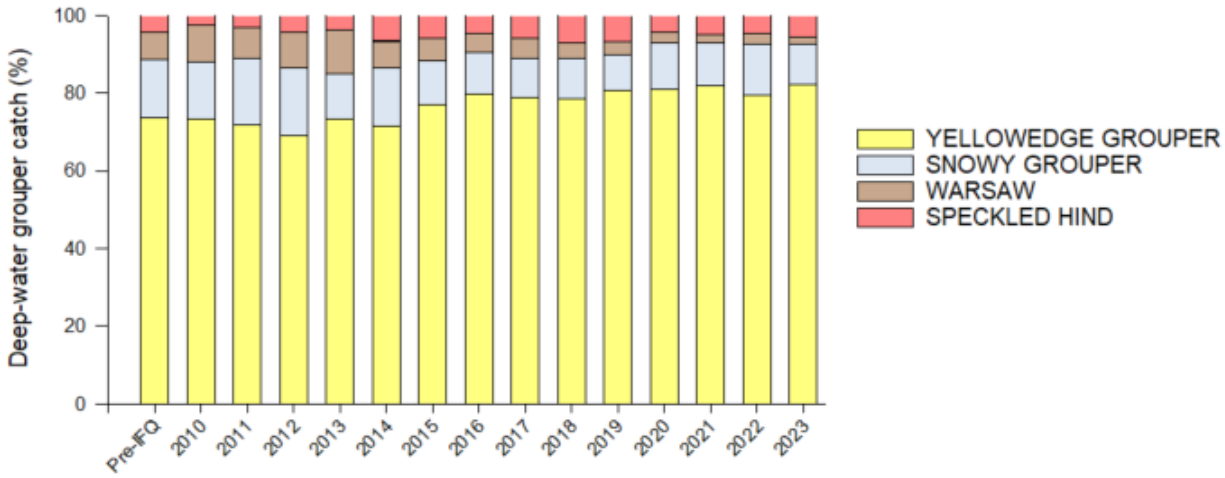

Figure 1.1.1. Percentages of commercial landings by species for the DWG complex from the 2023 Grouper-Tilefish IFQ Program Report[2]. Data for the years prior to the start of the IFQ program are summarized as "Pre-IFQ".

Commercial Sector

Commercial harvest of DWG has been managed under the Grouper-Tilefish IFQ program since 2010 (GMFMC 2008b). Any vessel commercially fishing for DWG must possess a federal commercial reef fish permit, have an active vessel monitoring system, have an IFQ account, and

[2] https://noaa-sero.s3.amazonaws.com/drop-files/cs/2023_GT_AnnualReport_FINAL.pdf

hold DWG allocation under the IFQ program. IFQ allocation is determined and distributed at the beginning of each calendar year by multiplying a shareholder's IFQ DWG shares, represented as a fraction of the total commercial quota, times the commercial quota for that year and complex. Allocation can be transferred to accounts that do not hold DWG shares. The current commercial quota for DWG is set 4% below the commercial ACL (GMFMC 2011a; Table 1.1.1). The buffer between the commercial quota and the commercial ACL was put in place to account for uncertainty with discards upon implementation of the IFQ program, and it was noted therein that this buffer could be re-evaluated with time, and to allow for flexibility measures between the Other SWG and DWG complexes (see below). Since the implementation of the Generic ACL/AM Amendment, the commercial buffer has not been re-evaluated. The IFQ program acts as the AM for the commercial sector for DWG, and the commercial quota has never been exceeded under the IFQ program.

Other SWG and DWG Flexibility Measures

Amendment 29 to the Reef Fish FMP (GMFMC 2009) established flexibility measures between the Other SWG and DWG complexes to reduce discards and allow commercial fishermen to better use the allocation they have in a given fishing year. These measures were implemented without regard to a species' stock status. A graphical depiction of these flexibility measures is shown in Figure 1.1.2. Briefly:

- A shareholder may land scamp under their DWG allocation, so long as they have no Other SWG allocation remaining in their shareholder account or any associated vessel accounts.
- A shareholder may land warsaw grouper or speckled hind under their SWG allocation, so long as they have no DWG allocation remaining in their shareholder account or any associated vessel accounts.

These flexibility measures will be evaluated in Amendment 58A, which would modify the Other SWG complex structure and modify catch limits for species currently managed therein.

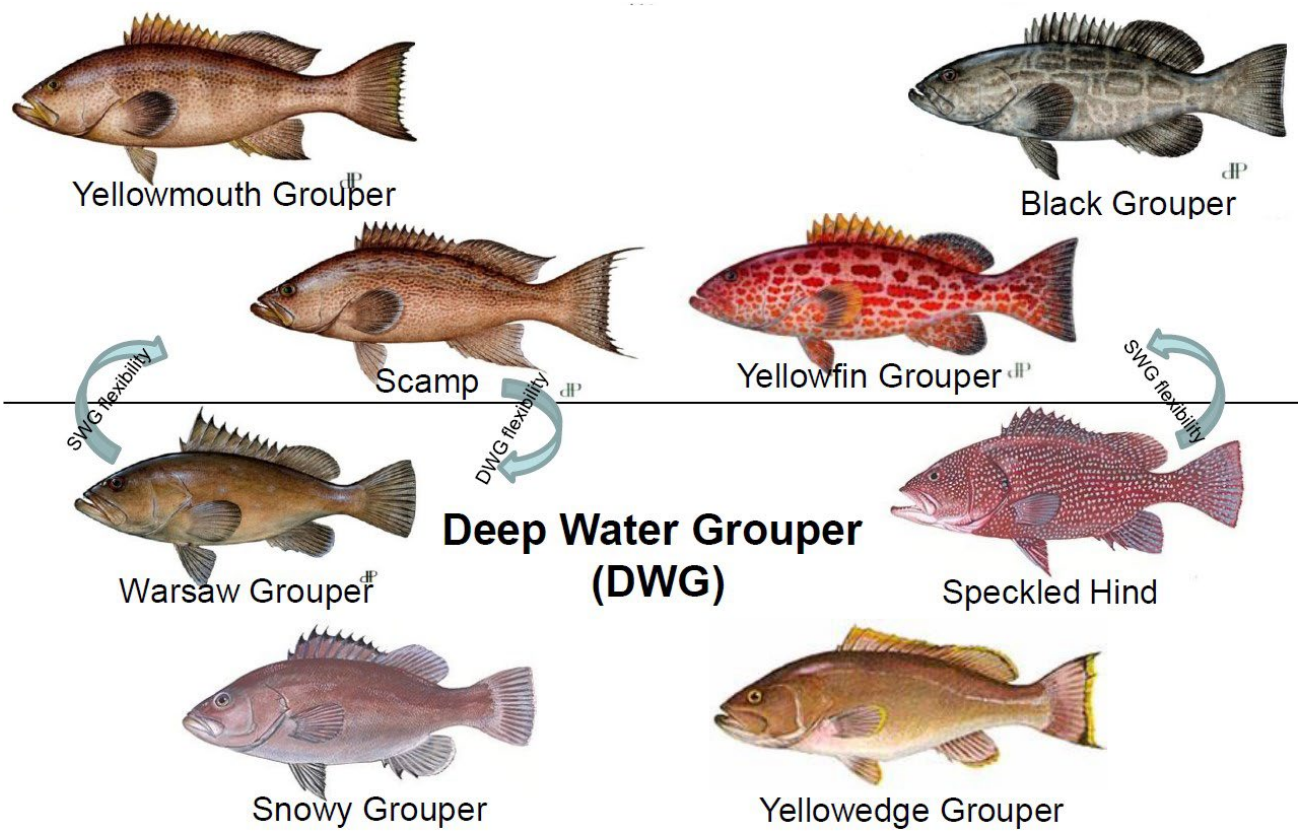

Figure 1.1.2. Depiction of the SWG and DWG flexibility measures as defined in Amendment 29 to the Reef Fish FMP.

Recreational Sector

Recreational landings comprise an increasing proportion of the total DWG landings in recent history, yet still comprise a minority fraction (see Table 1.1.2). Presently, there is no defined recreational ACL for DWG. The difference between the sector apportionment for the commercial ACL and the total complex ACL is available for the recreational sector to harvest. Outside of the use of the IFQ program as the AM for the commercial sector, the only other AM for the DWG complex is a post-season AM for the recreational sector, which states that in the year following an overage, fishing will close for the recreational sector if the complex ACL is projected to be reached. No payback provision for an overage of the complex ACL currently exists. The complex ACL has not been exceeded since implementation of the IFQ program in 2010, and thus, the closure has not been invoked. However, because the AM is based on reaching the complex ACL (combined commercial and recreational), it would allow for overfishing each year since the recreational (undefined) catch limit could be exceeded prior to the commercial sector harvesting its IFQ quota. In this scenario, the commercial sector would still be permitted to capture their quota, allowing for the stock ACL to be exceeded. This scenario is more likely to occur given the reductions in catch limits being proposed in this document.

Recreational Data Collection

For a summary of the history of recreational data collection in the Gulf since 1979, please refer to Appendix E.

Recent Stock Assessments and Catch Projections

SEDAR 85 (2023)

A stock assessment for yellowedge grouper (SEDAR 85) was completed in 2023 using data through 2021. This assessment used updated recreational landings information informed by MRIP-FES. However, because recreational landings make up such a small fraction of total yellowedge grouper removals (Table 1.1.3), they were combined with the commercial vertical line fleet for the assessment. These fleets were combined due to similarities in their estimated selectivity and retention functions (i.e., ages and lengths of fish caught by this gear type and kept). In reviewing SEDAR 85, the Council's SSC determined that the default maximum sustainable yield (MSY) proxy value of the yield when fishing at a fishing mortality rate (F) that produces a spawning potential ratio (SPR) of 30 percent for the DWG complex ($F_{30\%SPR}$) was not biologically appropriate for protogynous hermaphrodites like yellowedge grouper. Thus, the SSC recommended changing the MSY proxy to a more conservative yield when fishing at $F_{40\%SPR}$. Based on this proxy, yellowedge grouper would not be overfished, but would be experiencing overfishing, as of 2021[3] (Table 1.1.4.). During its review of SEDAR 85, the SSC recommended revised catch limits for yellowedge grouper, which are expected to end overfishing and are shown in Table 1.1.5.

Table 1.1.4. Summary of benchmarks and reference points used in the SEDAR 85 assessment. Spawning stock biomass (SSB) is in metric tons (male and female combined SSB), whereas F is a harvest rate (total biomass killed all ages / total biomass age 1+). An MSY proxy of the yield when fishing at $F_{40\%SPR}$ is presented.

Criteria	Definition	Value
SSB_0	Virgin SSB	13,197
$F_{MSYProxy}$	Equilibrium F to achieve 40% SPR	0.044
MFMT	$F_{MSYProxy}$	0.044
$F_{Current}$	Geometric mean of $F_{2019\text{-}2021}$	0.047
$F_{Current}$/MFMT	Current overfishing status	**1.08**
$SSB_{MSYProxy}$	Equilibrium SSB at $F_{40\%SPR}$	4,842
MSST	0.75 * $SSB_{40\%SPR}$	3,632
$SSB_{Current}$	SSB in 2021	6,017
$SSB_{Current}/SSB_{MSYProxy}$	Stock status based on $SSB_{40\%SPR}$	1.24
$SSB_{Current}$/MSST	Stock status based on MSST	**1.66**
$SSB_{Current}/SSB_0$	SSB in 2021 compared to virgin SSB	0.46

[3] 2021 is the terminal year of the stock assessment.

Table 1.1.5. SSC recommended OFL and ABC values for yellowedge grouper, based on the results of SEDAR 85 (2023) and using an MSY proxy of the yield when fishing at $F_{40\%SPR}$. Catch limits are in lb gw.

Year	OFL	ABC
2025 – 2029+	487,000	372,000

The SSC also recommended updated catch limits for snowy grouper, warsaw grouper, and speckled hind using landings calibrated to MRIP-FES to inform recreational landings (Table 1.1.6). The SSC used Tier 3b of the Council's ABC Control Rule[4], which is reserved for unassessed and data-poor species, since none of these three species have a stock assessment available to use to inform management decisions.

Table 1.1.6. SSC recommended combined OFL and ABC values for snowy grouper, warsaw grouper, and speckled hind in lb gw.

Year	OFL	ABC
2025+	244,035	183,026

The SSC thought it appropriate, in the case of DWG, to continue managing all four species together as a complex (Table 1.1.7) by adding the OFL and ABC values for yellowedge grouper to the values for snowy grouper, warsaw grouper, and speckled hind. Since DWG species inhabit similar environments, the SSC acknowledged the difficulty for fishermen attempting to avoid catching yellowedge grouper when targeting other DWG species. Managing all four DWG species together under combined catch limits is expected to reduce overall discard mortality compared to managing each DWG species individually.

Table 1.1.7. SSC combined DWG OFL and ABC recommendations in lb gw.

Year	OFL	ABC
2025 – 2029+	731,035	555,026

Expected Management Considerations

The Council is considering revising the MSY proxy for yellowedge grouper given the SSC's recommendation to modify that proxy to the yield when fishing at $F_{40\%SPR}$. Due in large part to the magnitude of the reduction of the DWG ABC, which is expected to reduce harvest for the DWG complex, it is possible that the number of DWG discards could increase. The SSC recommended keeping the four DWG species in the same complex for management to reduce discards, especially because the DWG species are vulnerable to considerable discard mortality due to the deep depths from which those species are harvested (greater than 100 meters or 330

[4] Tier 3b of the Council's ABC Control Rule is used when there is no stock assessment available (as is the case for three of the four DWG species), but landings data exist. Based on SSC judgement, recent landings may be unsustainable. The OFL is then set equal to the mean of the landings from a representative time series, typically the most recent 10 years. The ABC is then set representative of an acceptable level of risk relative to scientific uncertainty. The default choice is to set the ABC at 75% of the OFL, but the SSC can use another percentage with justification (GMFMC 2012).

feet). Because recent recreational sector landings have exceeded the portion of the DWG stock ACL available to the recreational sector for harvest (see Table 1.1.2), the Council is considering establishing a recreational ACL, and considering sector allocations. Further, the Council is considering changes to the current AMs to prevent overfishing.

1.2 Purpose and Need

The purpose of this amendment is to modify the SDC, sector allocations, catch limits, and AMs of the DWG complex species in response to recent stock assessment results.

The need for these actions is to use the best scientific information available, based on the recent stock assessment, to implement measures to end current and prevent future overfishing of yellowedge grouper, and to achieve optimum yield for the species considered herein, consistent with the authority under the Magnuson-Stevens Fishery Conservation and Management Act.

1.3 History of Management

This section focuses specifically on management modifications affecting the DWG complex. A complete history of management for the Reef Fish FMP is available on the Council's website.[5]

Amendment 1 to the Reef Fish FMP, including an environmental assessment (EA), regulatory impact review (RIR), and regulatory flexibility analysis (RFA), implemented in 1990, set objectives to stabilize long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age fish to achieve at least 20% spawning stock biomass per recruit by January 1, 2000. It set a five-grouper recreational daily bag limit; allowed a 2-day possession limit for charter vessels and head boats on trips that extend beyond 24 hours, provided the vessel has two licensed operators aboard as required by the U.S. Coast Guard, and each passenger can provide a receipt to verify the length of the trip; set an 11.0 mp commercial quota for grouper, with the commercial quota divided into a 9.2 mp SWG (black grouper, gag, red grouper, Nassau grouper, yellowfin grouper, yellowmouth grouper, rock hind, red hind, speckled hind, and scamp) quota and a 1.8 mp DWG (misty grouper, snowy grouper, yellowedge grouper, and warsaw grouper, and scamp once the SWG quota was filled) quota; established a longline and buoy gear boundary at the 50-fathom depth contour west of Cape San Blas, Florida, and the 20-fathom depth contour east of Cape San Blas, inshore of which the directed harvest of reef fish with longline gear and buoy gear was prohibited, and the retention of reef fish captured incidentally in other longline operations (e.g., sharks) was limited to the recreational daily bag limit; limited trawl vessels to the recreational size and daily bag limits of reef fish; established fish trap permits (up to 100 fish traps per permit holder); and established a commercial reef fish vessel permit.

Amendment 3 to the Reef Fish FMP, including an EA, RIR, and RFA and implemented in July 1991, transferred speckled hind from the SWG quota category to the DWG quota category.

[5] https://gulfcouncil.org/fishery-management/implemented-amendments/reef-fish/

Amendment 4 to the Reef Fish FMP, including an EA, RIR, and IRFA, and implemented in May 1992, established a moratorium on the issuance of new reef fish permits for a maximum period of three years. The moratorium was created to moderate short term future increases in fishing effort and to attempt to stabilize fishing mortality while the Council considers a more comprehensive effort limitation program. It allows the transfer of permits between vessels owned by the permittee or between individuals when the permitted vessel is transferred. Amendment 4 also changed the time of the year that total allowable catch is specified from April to August and included additional species in the reef fish management unit.

Amendment 5 to the Reef Fish FMP, including an EA, RIR, and RFA and implemented in February 1994, established restrictions on the use of fish traps in the Gulf exclusive economic zone (EEZ); implemented a three-year moratorium on the use of fish traps by creating a fish trap endorsement for fishermen with historical landings; created a special management zone (SMZ) with gear restrictions off the Alabama coast; created a framework procedure for establishing future SMZs; required that all finfish except for oceanic migratory species be landed with head and fins attached; and closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

Amendment 11 to the Reef Fish FMP, including EA, RIR, and IRFA, was partially approved by NMFS and implemented in January 1996. The six approved provisions are: (1) limit sale of Gulf of Mexico (Gulf) reef fish by permitted vessels to permitted reef fish dealers; (2) require that permitted reef fish dealers purchase reef fish caught in Gulf federal waters only from permitted vessels; (3) allow transfer of reef fish permits and fish trap endorsements in the event of death or disability; (4) implement a new reef fish permit moratorium for no more than five years or until December 31, 2000, while the Council considers limited access for the reef fish fishery; (5) allow permit transfers to other persons with vessels by vessel owners (not operators) who qualified for their reef fish permit; and, (6) allow a one-time transfer of existing fish trap endorsements to permitted reef fish vessels whose owners have landed reef fish from fish traps in federal waters, as reported on logbooks received by the Science and Research Director of the National Oceanic and Atmospheric Administration (NOAA) Fisheries from November 20, 1992 through February 6, 1994. NOAA Fisheries disapproved a proposal to redefine optimum yield (OY) from 20 percent spawning potential ratio (SPR) (the same level as overfishing) to an SPR corresponding to a fishing mortality rate of $F_{0.1}$ until an alternative operational definition that optimizes ecological, economic, and social benefits to the nation could be developed. In April 1997, the Council resubmitted the OY definition with a new proposal to redefine OY as 30 percent SPR. The resubmission document was disapproved by NMFS.

A **Framework Action**, including an EA, RIR, and RFA, and implemented in June 2000, established two marine reserves (Steamboat Lumps and Madison-Swanson) that are closed year-round to fishing for all species under the Council's jurisdiction.

Amendment 17 to the Reef Fish FMP, including EA, RIR and IRFA, and implemented in August 2000, extended the commercial reef fish permit moratorium for another five years, from its previous expiration date of December 31, 2000, to December 31, 2005, unless replaced sooner by a comprehensive controlled access system. The purpose of the moratorium is to provide a

stable environment in the fishery necessary for evaluation and development of a more comprehensive controlled access system for the entire commercial reef fish fishery.

Secretarial Amendment 1 to the Reef Fish FMP, including EIS, RIR, IRFA, and effective July 2004, reduced the DWG quota from 1.6 mp ww (equal to 1.35 mp landed weight) to 1.02 mp gw.

Amendment 24 to the Reef Fish FMP, including EA, RIR, and IRFA, and implemented in August 2005, establishes a permanent limited access system for the commercial fishery for Gulf of Mexico reef fish. Permits issued under the limited access system are renewable and transferable.

An **October 2005 Regulatory Amendment**, including EA, RIR, IRFA, and implemented in January 2006, established an aggregate DWG and SWG commercial trip limit of 6,000 lb gw.

Amendment 29 to the Reef Fish FMP, including an EA, RIR, and RFA, and implemented in January 2010, established an IFQ system for the commercial harvest of grouper and tilefish.

Amendment 30B to the Reef Fish FMP, including a final Supplemental Environmental Impact Statement (SEIS), RIR and IRFA, and implemented in May 2009, repealed the commercial closed season of February 15 to March 15 on gag, black and red grouper, and replaced it with a January through April seasonal area closure to all fishing at the Edges 40-fathom contour, a 390-nautical square mile gag spawning region northwest of Steamboat Lumps. In addition, the Steamboat Lumps and Madison-Swanson fishing area restrictions were continued indefinitely. For the recreational sector, the amendment reduced the aggregate grouper bag limit from five fish to four. Finally, the amendment required that all vessels with federal commercial or charter reef fish permits comply with the more restrictive of state or federal reef fish regulations when fishing in state waters.

Amendment 31 to the Reef Fish FMP, including a final SEIS, RIR and IRFA, implemented May 2010, prohibited the use of bottom longline gear shoreward of a line approximating the 35-fathom contour from June through August; established a longline endorsement; and restricted the total number of hooks onboard each reef fish bottom longline vessel to 1,000, of which only 750 may be rigged for fishing.

The **Generic ACLs/AMs Amendment** (GMFMC 2011a) addressed a requirement in the Magnuson-Stevens Reauthorization Act of 2006 to establish ACLs and AMs for federally managed species. It set the Status Determination Criteria and current catch limits for the Deep-water grouper complex.

Amendment 36A to the Reef Fish FMP, including EIS, RIR and IRFA, and implemented in January 2019, requires all reef fish permitted vessels landing federally managed reef-fish to land at approved locations and hail-in at least 3 hours, but no more than 24 hours before landing. The Amendment returns red snapper and grouper-tilefish shares from non-activated individual fishing quota (IFQ) accounts to NMFS for redistribution and allows NMFS to withhold a portion of IFQ allocation at the start of the year equal to an anticipated quota reduction.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1: Modification of Deep-Water Grouper (DWG) Maximum Sustainable Yield (MSY) Proxy, Overfishing Limit (OFL), Acceptable Biological Catch (ABC), and Complex Annual Catch Limit (ACL)

Alternative 1: No Action. Maintain the current MSY proxy, OFL, ABC, and DWG complex ACL. The MSY proxy for the DWG complex is the yield when fishing at a fishing mortality rate (F) that produces a spawning potential ratio (SPR) of 30 percent for the DWG complex ($F_{30\%SPR}$), the OFL is 1.113 million pounds (mp) gutted weight (gw), the ABC and complex ACL are 1.105 mp gw.

Preferred Alternative 2: Revise the MSY proxy and catch limits for the DWG complex based on the Gulf Council's (Council) Scientific and Statistical Committee (SSC) recommendations. The OFL and ABC for yellowedge grouper would be set based on an MSY proxy of the yield when fishing at $F_{40\%SPR}$, and the yield when fishing at 75% of the F_{MSY} proxy, respectively. The OFL and ABC for the three remaining species would be based on Tier 3b of the Council's ABC Control Rule. The DWG complex MSY proxy would be the yield when fishing at $F_{40\%SPR}$. The OFL and ABC for yellowedge grouper and the three remaining species would be combined, and all four species would be managed as a single complex with a complex OFL of 731,035 pounds (lb) gw, and an ABC of 555,026 lb gw. The complex ACL would be set equal to the ABC.

Note: *Alternative 1 is not a viable alternative because the catch limits in Alternative 1 were set using recreational data from the Marine Recreational Fisheries Statistics Survey (MRFSS), which is no longer in operation. Further, these catch limits exceed those recently recommended by the Council's SSC (see Alternative 2). Subsequent catch limit recommendations rely on recreational harvest estimates using the Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES). These analyses are presently recognized as consistent with the best scientific information available.*

Discussion:

Gulf of America (Gulf) yellowedge grouper were assessed in Southeast Data, Assessment, and Review (SEDAR) 85 (2023), which estimated that while the stock was not overfished as of 2021, it was experiencing overfishing. The Council's SSC evaluated SEDAR 85 and found the analyses to be consistent with the best scientific information available at its February 2024 meeting. The SSC recommended that the OFL and ABC for yellowedge grouper be 487,000 lb gw and 372,000 lb gw, respectively. The SSC then evaluated updated catch limits for the other three DWG complex species: snowy grouper, warsaw grouper, and speckled hind. These updated landings were informed by MRIP-FES for recreational private vessel landings. The SSC recommended that the OFL and ABC for the remaining three DWG complex species for 2025 and subsequent years be 244,035 lb gw and 183,026 lb gw, respectively. Since DWG species

inhabit similar environments, the SSC acknowledged the difficulty fishermen would have in avoiding yellowedge grouper when targeting other DWG species, and vice versa. Therefore, the SSC also recommended maintaining yellowedge grouper as part of the DWG complex. The catch limits for the DWG complex are calculated by summing the SSC's recommended OFL and ABC for yellowedge grouper as informed by SEDAR 85 with the OFL and ABC for the rest of the DWG complex (calculated using Tier 3b of the ABC Control Rule).

Alternative 1 would maintain the current MSY proxy at $F_{30\%SPR}$ and maintain the OFL and ABC for the DWG complex at 1.113 mp gw and 1.105 mp gw, respectively. The MSY proxy in **Alternative 1** was established in Amendment 48 to the Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf (Reef Fish FMP; GMFMC 2021). At that time, there was no defined MSY proxy for any of the species in the DWG complex. The catch limits in **Alternative 1** were based on the results of SEDAR 22 for yellowedge grouper and Tier 3b of the ABC Control Rule for the other three species, which used recreational landings data from MRFSS. The National Marine Fisheries Service (NMFS) stopped using MRFSS to estimate recreational landings in 2013. Further, the catch limits in **Alternative 1** would exceed those currently recommended by the SSC and are no longer consistent with the best scientific information available. Thus, **Alternative 1** is not a viable alternative.

Preferred Alternative 2 would revise the catch limits for the DWG complex based on the SEDAR 85 stock assessment for yellowedge grouper and Tier 3b of the Council's ABC Control Rule for the other three DWG species. **Preferred Alternative 2** incorporates the SSC's recommendations from its February 2024 meeting, which used MRIP-FES data for recreational private vessel landings. The DWG complex OFL would be 731,035 lb gw, and the ABC would be 555,026 lb gw. **Preferred Alternative 2** would also modify the MSY proxy for the DWG complex to be the yield when fishing at $F_{40\%SPR}$, based on the SSC's recommendations for yellowedge grouper and the similarities between the species in the DWG complex with respect to their life histories. The SSC recommended changing the yellowedge grouper MSY proxy because yellowedge grouper reaches sexual maturity at older ages relative to other Gulf groupers (half of females are sexually mature by age-9, compared to age-3 in red grouper) and is longer lived (maximum age is estimated at 85 years, SEDAR 85 2023). The other species in the complex are not as long-lived as yellowedge grouper but share other similar characteristics such as later maturity at age (Stevens et al. 2019). Amendment 48 to the Reef Fish FMP provides that for future assessments of reef fish stocks, the MSY proxy equals the yield produced by the $F_{MSYProxy}$ recommended by the SSC and subject to approval by the Council through a plan amendment. This amendment recognizes the SSC's recommendation for yellowedge grouper, and because yellowedge grouper is managed as part of the DWG complex and the other species in the complex have similar life histories, adopts this new MSY proxy for the complex.

To reduce the likelihood of dead discards, and due to the difficulty in targeting any specific DWG species separate from the others, the four DWG complex species are managed as a single complex under **Preferred Alternative 2**. Despite combining the yellowedge grouper OFL and ABC with the three other DWG species, the recommended catch limits are expected to end and prevent future overfishing of yellowedge grouper. This is due in part to the historical composition of landings from the DWG complex, in that the other three species normally

account for some minority fraction of landings for that complex (approximately 20% for 2019 – 2023; see Table 1.1.2).

Compared to **Alternative 1**, **Preferred Alternative 2** would reduce allowable catch of DWG by approximately 50%. This reduction results from three main factors. First, the use of the MSY proxy ($F_{40\%SPR}$) for yellowedge grouper results in a reduction in allowable yield compared to **Alternative 1**, as more of the spawning stock biomass is conserved. Second, when evaluating the projections for yellowedge grouper, the SSC used the average recruitment to the population from 1998 – 2012 to inform future recruitment from the yellowedge grouper stock. This timeline includes periods of lower recruitment (during the time period in which recruitment was estimable), and results in a lower yield projection to account for that, compared to using the long-term average of recruitment from the stock assessment. Third, the yield projections informing **Preferred Alternative 2** are designed to end overfishing, as is currently occurring under **Alternative 1**.

Council Conclusions:

The Council recognized the advice from its SSC regarding the appropriateness of updating the MSY proxy for DWG complex species and decided to update that MSY proxy consistent with that advice (**Preferred Alternative 2**). The Council expects changing the MSY proxy for the DWG complex to the yield when fishing at $F_{40\%SPR}$ will allow management of the complex to a more robust and sustainable stock size. The Council also agreed with the SSC's recommendations for the DWG complex OFL and ABC.

2.2 Action 2: Modification of Deep-Water Grouper Sector ACLs and Sector Allocations

***Note**: This action uses catch levels derived from Preferred Alternative**.** Therefore, Alternative 1 reflects the status quo method of specifying the catch limits but uses the ABC from Preferred Alternative 2 in Action 1 to specify the complex ACL. All of the alternatives would account for the change in the recreational data from MRFSS to MRIP-FES.*

Alternative 1: No Action. The commercial sector is allocated 96.50% of the DWG complex ACL. The recreational sector's ACL is unspecified. The DWG complex ACL is set equal to the DWG complex ABC. Based on the DWG complex ABC/ACL of 555,026 lb gw, the commercial ACL is 535,600 lb gw. The commercial quota is reduced from the commercial ACL by 4%[6] and is set at 514,176 lb gw[7].

Year	OFL	ABC (Complex ACL)	Rec ACL	Comm ACL	Comm Quota
2025-2029+	731,035	555,026	Unspecified	535,600	514,176

Alternative 2: The DWG complex ACL is set equal to the DWG complex ABC. Establish a recreational ACL and sector allocation based on the average recreational landings as used in the Generic ACL/AM Amendment (2001 – 2004). The recreational and commercial ACLs sum to equal the DWG complex ACL. This results in a recreational ACL of 19,426 lb gw, or 3.50% of the complex ACL. The commercial sector is allocated 96.50% of the complex ACL, or 535,600 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 514,176 lb gw.

Year	OFL	ABC (Complex ACL)	Rec ACL	Comm ACL	Comm Quota
2025-2029+	731,035	555,026	19,426	535,600	514,176

Preferred Alternative 3: The DWG complex ACL is set equal to the DWG complex ABC. Establish a recreational ACL and sector allocation based on the average recreational landings from the most recent 5 years (2019 – 2023). The recreational and commercial ACLs sum to equal the DWG complex ACL. This results in a recreational ACL of 56,668 lb gw, or approximately 10.21% of the complex ACL. The commercial sector is allocated approximately

[6] The 4% reduction in the commercial quota from the commercial ACL was implemented with the Grouper-Tilefish Individual Fishing Quota (IFQ) program. The buffer accounts for flexibility measures which allow for a system of cross-use of allocation between the DWG and Other Shallow-water Grouper share categories, and for any other variability in landings associated with the institution of the program or new participation.

[7] The commercial ACL and commercial quota are presently codified in the federal regulations as 1.067 million pounds gutted weight (mp gw) and 1.024 mp gw, respectively; the recreational ACL is not codified.

89.79% of the complex ACL, or 498,358 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 478,424 lb gw.

Year	OFL	ABC (Complex ACL)	Rec ACL	Comm ACL	Comm Quota
2025-2029+	731,035	555,026	56,668	498,358	478,424

Alternative 4: The DWG complex ACL is set equal to the DWG complex ABC. Establish a recreational ACL and sector allocation based on an equal reduction in the landings from the recreational and commercial sectors from the most recent 5 years (2019 – 2023), such that the resulting recreational and commercial ACLs sum to equal the DWG complex ACL. This results in a recreational ACL of 37,964 lb gw, or approximately 6.84% of the complex ACL. The commercial sector is allocated approximately 93.16% of the complex ACL, or 517,062 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 496,380 lb gw.

Year	OFL	ABC (Complex ACL)	Rec ACL	Comm ACL	Comm Quota
2025-2029+	731,035	555,026	37,964	517,062	496,380

Discussion:

Currently, there is no specified DWG ACL for the recreational sector. However, the commercial ACL was specified as 96.5% of the DWG complex ACL (**Alternative 1**) in the Generic ACL/AM Amendment (GMFMC 2011a) so there would be a portion of the complex ACL unallocated which would be sufficient to allow the recreational fishery to continue. There are no in-season measures that limit recreational harvest, but there is a 4-grouper daily recreational bag limit. The post-season AM only limits recreational harvest (in the year following an overage of the DWG complex ACL) after the DWG complex ACL has been reached. In addition, the recreational AM could still allow for overfishing since recreational landings could exceed the 3.5% of the DWG complex ACL prior to closure of the recreational fishery, while still allowing harvest of the entire commercial quota. This could occur because the AM allows NMFS to close the recreational sector only if the sum of commercial and recreational landings reaches or is projected to reach the DWG complex ACL. The commercial sector operates under the Grouper-Tilefish IFQ program and is managed to the commercial quota and is allowed to fish year-round. Therefore, total commercial landings cannot be determined until the fishing year is over.

The current commercial allocation is based on that sector's average landings from 2001 – 2004. Further, the commercial quota is decreased from the commercial ACL by 4%. This buffer was originally intended (at the inception of the IFQ program) to account for uncertainty in commercial discards, and to accommodate the flexibility measures that exist in the IFQ program between the Other Shallow-water Grouper and the DWG share categories. The flexibility measures allow a fisherman to land certain species from one share category under the other share category, so long as they no longer hold any allocation for the share category in which the species is included. These flexibility measures are being reconsidered in Amendment 58A to the

Reef Fish FMP. If Amendment 58A discontinues use of flexibility measures, then the commercial quota for DWG would be set equal to the commercial ACL, with no buffer.

The alternatives in Action 2 differ in how they determine the allocation of the complex ACL between the commercial and recreational sectors. The recreational landings used to establish the allocation scenario in **Alternative 1** were based on recreational data from MRFSS. **Alternative 2** also uses the existing allocation to create a recreational ACL, thereby using the historical proportion of landings attributable to each fishing sector from the Generic ACL/AM Amendment.

Because of the transition to MRIP-FES recreational data (which generally estimate greater historical recreational landings than MRFSS) and the increase in recreational landings estimated in the SEDAR 85 stock assessment, additional recreational removals (based on estimates from MRIP-FES rather than MRFSS) are not accounted for in **Alternative 1** or **Alternative 2**. This means with the reduction in the catch limits recommended by the Council's SSC, there is a *de facto* reallocation to the commercial sector compared to the recreational sector because recreational landings estimates in **Preferred Alternative 3** and **Alternative 4** use MRIP-FES data, which estimate higher recreational landings compared to the MRFSS estimates used in **Alternative 1** and **Alternative 2**. Thus, the commercial sector is inherently benefitting from a sector allocation standpoint if the sector allocation does not explicitly account for the change from MRFSS to MRIP-FES, because after the implementation of this amendment, MRIP-FES landings estimates would be used to monitor recreational landings. Although **Alternative 2** would benefit the commercial sector by retaining the same allocation scenario as represented in **Alternative 1**, having a recreational ACL could allow for the establishment of a more effective recreational AM (see Action 3). Managing the recreational sector under **Alternative 2** may be difficult given the high proportional standard error surrounding DWG recreational landings and the low recreational catch limits being set under this alternative. Under **Alternative 2**, the recreational ACL would have been exceeded in each of the last 5 years (2019 - 2023).

Preferred Alternative 3 would establish a recreational ACL and sector allocation based on the average recreational landings from the most recent five years (2019 – 2023; see Table 1.1.2.). This time period includes 2020, during which the COVID-19 pandemic resulted in various effects on fishing effort and landings. However, there is no clear effect on DWG landings during 2020. Overall commercial fishing effort, and landings per trip, are similar to surrounding years (e.g., 2018 - 2019, 2021 - 2022). The high variability in the recreational landings data make comparisons among years less meaningful. Thus, in the absence of a quantitative reason for excluding 2020, those data are included here. The recreational ACL would equal 56,668 lb gw, or approximately 10.21% of the DWG complex ACL. The commercial ACL would equal 498,358 lb gw, or approximately 89.79% of the DWG complex ACL.[8] The commercial quota is reduced from the commercial ACL by 4% and is set at 478,424 lb gw. **Preferred Alternative 3**

[8] These percentages are rounded to the nearest two significant figures. The exact mean of recreational landings from 201-2023 equals 56,649 lb gw, which is 10.2065% of the complex ACL. Applying the rounded percentage of 10.21% to the complex ACL, the results in the recreational ACL of 56,668 lb gw. This leaves 498,358 lb gw for the commercial sector ACL, which is approximately 89.79% of the complex ACL.

uses more recent recreational landings compared to **Alternative 1** and **Alternative 2**, and landings estimates have ranged from 29,663 lb gw to 88,807 lb gw over the course of the 2019 - 2023 reference period. Under **Preferred Alternative 3**, the recreational ACL would have been exceeded in three of the last five years (2019, 2020, and 2023).

Alternative 4 would establish a recreational ACL and sector allocation based on an equal reduction in the landings from the recreational and commercial sectors from 2019 – 2023 (see Table 1.1.2), such that the resulting sector ACLs sum to the DWG complex ACL proposed in Action 1. This method uses a percentage reduction based on the proportional landings attributable to each sector during the reference period. To make this reduction, the average landings from 2019 – 2023 (828,298 lb gw) were compared to the proposed DWG complex ACL (555,026 lb gw), indicating that a reduction in landings of approximately 33% would be necessary to constrain landings to the proposed DWG complex ACL. This percent reduction was applied to the average recreational landings from 2019 – 2023, and results in a recreational ACL of 37,964 lb gw, or approximately 6.84% of the DWG complex ACL (rounded to two significant figures). The commercial sector, equally reduced, is allocated approximately 93.16% of the DWG complex ACL, or 517,062 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 496,380 lb gw. **Alternative 4** applies proportionally the same degree of reduction in recent landings to each fishing sector, based on those sectors' respective landings from 2019 - 2023. Under **Alternative 4**, the recreational ACL would have been exceeded in four of the last five years (2019, 2020, 2022, and 2023).

Appendix B outlines the expected reduction in quota compared to recent landings for the commercial IFQ program, and estimates the recreational fishing season duration, using landings data from 2021 – 2023. Under all alternatives in Action 2, the commercial sector would be expected to land its quota based on its average landings from 2021 – 2023. For the recreational sector the number of fishing days needed to harvest the ACL is directly related to the size of the recreational ACL and to the month in which fishing occurs. Table 2.2.1, which mirrors Table B.4 from Appendix B, shows the predicted recreational closure dates based on when the ACL is projected to be met. The longest recreational fishing season duration corresponds with **Preferred Alternative 3**. The next longest fishing season duration corresponds with **Alternative 4**, followed equally by **Alternative 1** and **Alternative 2**.

Table 2.2.1. Projected Gulf DWG closure dates expected for the recreational sector with each proposed ACL alternative.

Alternatives	Proposed Recreational ACL (lb gw)	3-year Average (2021-2023)	Upper 95% 3-year Average (2021-2023)
Alternative 1: No Action	**undefined**	**Jun 10**	**May 12**
Alternative 2	**19,426**	**Jun 10**	**May 12**
Preferred Alternative 3	**56,668**	**No Closure**	**Jul 1**
Alternative 4	**37,964**	**Sep 14**	**Jun 5**

Source: SEFSC MRIP-FES Recreational ACL Dataset (December 2024). Note: the fishing year for DWG is January 1 – December 31.

Under **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4**, the recreational and commercial ACLs sum to equal the DWG complex ACL, which is set equal to the DWG complex ABC. **Preferred Alternative 3** and **Alternative 4** would set the recreational sector's allocation of the total DWG complex ACL higher than **Alternative 2**. Under all alternatives and based on the estimated recreational landings from the most recent five years, it is likely that recreational landings would exceed the recreational ACL. However, the larger ACL in **Preferred Alternative 3** would make exceeding the ACL less likely than under other alternatives. In addition, compared to **Alternative 2** (there is no recreational ACL under **Alternative 1**) and **Alternative 4**, **Preferred Alternative 3** may improve the ability of NMFS to monitor recreational harvest against the recreational ACL and apply AMs in time to stop recreational harvest prior to exceeding the recreational ACL. This is due to the comparatively lower proposed recreational ACLs under **Alternative 2** and **Alternative 4**, and because the larger ACL under **Preferred Alternative 3** may result in landings being spread over a longer time period and allow for more landings data to accumulate and be used in the landings estimated before an ACL closure is implemented. Table 2.2.2 shows the sector allocations and corresponding ACLs in this action. Figure 2.2.1 demonstrates how the alternatives in Action 2 compared to recreational landings from 2014 – 2023. Over the last 10 years, recreational landings would have exceeded the recreational ACL nine times under **Alternative 2**, five times under **Preferred Alternative 3**, and seven times under **Alternative 4**. Similar data for the commercial sector are not presented, because recent commercial landings exceed the proposed commercial ACLs in all alternatives in Action 2 for the last 10 years. However, because the commercial sector is managed under an IFQ program, the commercial ACL is not expected to be exceeded no matter the alternative chosen in this action.

Table 2.2.2. Sector allocations and corresponding ACLs for alternatives presented in Action 2. All ACLs are in lb gw.

Alternative	Complex ACL	Rec Sector Allocation	Rec ACL	Comm Sector Allocation	Comm ACL	Comm Quota
1	555,026	*none*	*undefined*	96.50%	535,600	514,176
2	555,026	3.50%	19,426	96.50%	535,600	514,176
Preferred 3	555,026	10.21%	56,668	89.79%	498,358	478,424
4	555,026	6.84%	37,964	93.16%	517,062	496,380

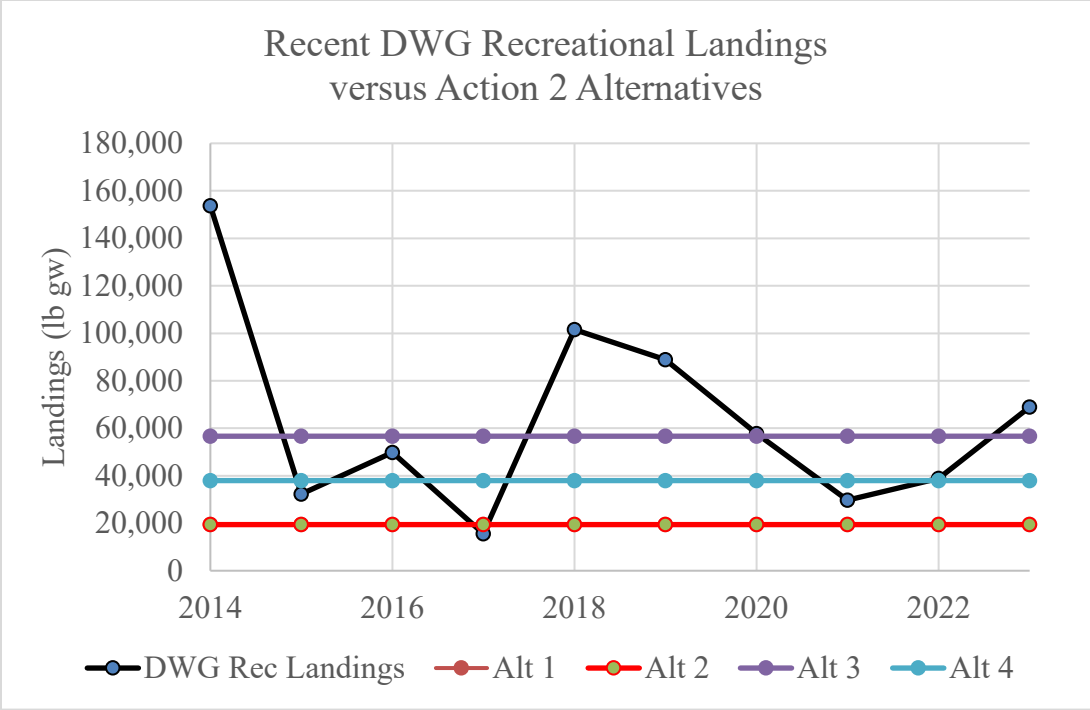

Figure 2.2.1. Comparison of recent landings of the DWG complex by the recreational sector in lb gw to the alternatives in Action 2. Recreational landings data derived from Table 1.1.2. The data for **Alternative 1** and **Alternative 2** overlap.

It is important to note that the representativeness and accuracy of the MRIP-FES recreational landings estimates is highly uncertain. This is due to two main reasons. First, the portion of the MRIP-FES survey which records catch, known as the Access Point Angler Intercept Survey (APAIS), is constrained to sampling at public locations and marinas which grant a surveyor access. Excluded from APAIS are all private docks and marinas, and other private access points. Given the distances necessary to travel to access the depths in which DWG species are typically harvested (greater than 100 meters or 330 feet, often requiring vessels to traverse long distances across Gulf waters to reach), larger vessels with greater fuel capacity and large and/or multiple engines are often used by private anglers to fish these species. This means that the recreational landings for private vessels are likely underestimated, and this potential bias should be considered in setting catch limits. Second, the proportional standard error about the annual recreational landings estimates for the species in the DWG complex regularly exceeds 50%, even when aggregated to the greatest possible degree (i.e., all recreational fleets combined, all areas in the Gulf combined, and all MRIP waves combined).[9] However, these data represent the only scientific information available related to recreational landings from Florida, Alabama, and Mississippi, and will be used as appropriate to monitor harvest as required under section 303(a)(15) of the Magnuson-Stevens Fishery Conservation and Management Act and the National Standard 1 Guidelines.

[9] https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries

Council Conclusions:

The Council determined that the allocation in **Alternatives 1** and **2** was not appropriate because it was based on outdated landings that do not consider that there is an increasing amount of recreational fishing effort for DWG species. The Council considered the allocation based on the equal reduction in each sector's landings but ultimately concluded that **Preferred Alternative 3**, which is based on recent recreational landings, was most appropriate. The Council noted the increasing trend in recreational fishing effort and that the commercial sector would retain a large proportion of the complex ACL under **Preferred Alternative 3.**

2.3 Action 3: Modification of Deep-Water Grouper Recreational Accountability Measures

Alternative 1: No Action. Maintain the recreational AMs for the DWG complex. If the stock complex ACL is exceeded in a fishing year, then in the following fishing year, the Regional Administrator will close the recreational sector for the remainder of the fishing year if the sum of commercial and recreational landings reaches or is projected to reach the stock complex ACL.

Note: *This AM directs NMFS to close the recreational sector if the sum of commercial and recreational landings reaches or is projected to reach the stock complex ACL. Because the IFQ system allows commercial landings year-round, it is unlikely that this AM will effectively constrain recreational landings to the remainder of the stock complex ACL unless NMFS assumes at the beginning of the fishing year that 100% of the commercial quota will be landed. However, this assumption is not clearly stated in the current AM.*

Alternative 2: Revise the post-season recreational AMs for the DWG complex. For the recreational sector, if the recreational ACL is exceeded in a fishing year, then in the following fishing year, the Regional Administrator would close the recreational sector for the DWG complex for the remainder of that fishing year when the recreational ACL is projected to be met.

Alternative 3: Revise the post-season recreational AMs for the DWG complex. For the recreational sector, if the recreational ACL is exceeded in a fishing year and the stock complex ACL for DWG is exceeded, then in the following fishing year, the Regional Administrator would close the recreational sector for the DWG complex for the remainder of the fishing year when the recreational ACL is projected to be met.

Preferred Alternative 4: For the recreational sector, if the average recreational DWG landings exceed the average recreational ACL, and the average DWG complex landings exceed the average DWG complex ACL over a three-year moving period, the Regional Administrator would reduce the duration of the recreational season by the amount projected such that the recreational ACL is not exceeded during the following fishing year unless NMFS determines based upon the best scientific information available (BSIA) that no adjustment to the recreational fishing season is necessary.

Discussion:

The current AMs for the DWG complex were established in the Generic ACL/AM Amendment (GMFMC 2011). These AMs, based on 96.5% commercial allocation, are reflected in **Alternative 1**. While the commercial allocation constitutes a large proportion of the complex ACL, it was deemed to not be excessive given the historical use of the resource at the time (GMFMC 2012). DWG species are found at greater depths and further distances from shore than most reef fish species, requiring larger vessels with greater fuel capacity and large and/or multiple engines to fish these species. However, there was some recreational harvest for these species, so the methods employed in GMFMC (2011a) left a portion of the complex ACL unallocated, which was thought to be sufficient at the time to allow the historical recreational fishery to continue. None of the DWG complex stocks were overfished, in a rebuilding plan, or

undergoing overfishing as of 2008, and the likelihood the DWG ACL would be exceeded was minimal. The rationale for the recreational AM was to allow for historical recreational fishing effort to continue unencumbered. For this reason, a post-season AM was thought to be appropriate for the DWG complex, and no overage adjustment (payback provision) was applied. However, **Alternative 1** is currently unlikely to constrain recreational landings because of the greatly reduced catch limits required under Action 1 and because the IFQ system allows commercial landings year-round. To increase the likelihood of constraining landings to the stock complex ACL, NMFS would have to assume at the beginning of the fishing year that the entire commercial quota would be landed and make projections on when to close the recreational season based on that assumption. However, since it is not clear that this was the intent of the AM when regulations were implemented, it is unclear whether NMFS could make that assumption.

Yellowedge grouper is undergoing overfishing as of 2021 (SEDAR 85 2023), and the Council must take steps to end overfishing. This is expected to be accomplished through the reduction of catch limits, as specified in Preferred Alternative 2 of Action 1. However, AMs are necessary to help ensure that those reduced catch limits are not exceeded. **Alternative 2** would modify the post-season AMs for the recreational sector such that if the recreational ACL, as established in Action 2, is exceeded in a fishing year, then in the following fishing year, the NMFS Regional Administrator would close the recreational sector for the DWG complex for the remainder of that fishing year (post-season AM) when the recreational ACL is projected to be met. The very low level of allowable harvest apportioned to the recreational sector under Alternative 1 and Alternative 2 of Action 2 would both present concerns about the ability to accurately restrain recreational harvest to the recreational ACL under **Alternative 2** in Action 3. The high interannual variability of these landings (see Table 1.1.2) would be expected to make accurately forecasting recreational fishing season durations difficult, and overages (or underages) of the recreational ACL would be expected. Preferred Alternative 3 and Alternative 4 in Action 2 both increase the recreational ACL relative to Alternative 2 in Action 2 and would increase the likelihood of avoiding a closure of the recreational fishing season due to imprecise recreational landings data under **Alternative 2** in Action 3.

Alternative 3 would revise the post-season recreational AMs for the DWG complex such that the Regional Administrator would close the recreational sector for the DWG complex when the recreational ACL is projected to be met only if both the recreational ACL and the stock complex ACL had been exceeded in the previous fishing year. For the commercial sector, the Grouper-Tilefish IFQ program would continue to serve as the AM. **Alternative 3** is similar to **Alternative 2** in that it is applied post-season; however, the threshold for a closure in the following fishing year is higher under **Alternative 3**. Based on the landings history in Table 1.1.2, it would be unlikely that the commercial sector would not land its quota, regardless of the selected preferred alternative in Action 2. Because the commercial quota is expected to be harvested each year, the chances of a recreational closure are expected to be the same under the **Alternative 2** and **Alternative 3** AMs.

Preferred Alternative 4 would revise the post-season AM for the recreational sector such that if the average recreational DWG landings exceed the average recreational ACL, and the average DWG complex ACL is exceeded over a three-year moving period, the Regional Administrator

(RA) would reduce the duration of the recreational season by the amount necessary to ensure that the recreational ACL is not exceeded during the following fishing year unless NMFS determines, based upon BSIA, that no adjustment to the recreational fishing season is necessary. In practice, two things about this alternative are similar to the others in Action 3. First, all alternatives in Action 3 would require the RA to reduce the duration of the recreational season by the amount necessary to ensure that the recreational ACL is not exceeded during the following fishing year, despite differences in wording between the alternatives. Second, consideration of BSIA is standard by the RA when projecting fishing season durations. However, in this instance, the Council thought it worthy to include such language in **Preferred Alternative 4** to make clear, the latitude available to NMFS under National Standard 2 to consider the available data and make the appropriate decision. **Preferred Alternative 4** examines the relationship between the recreational landings and recreational ACL and complex ACL annually but considers the application of the AM based on this relationship over a three-year period. The use of the average landings over that three-year period allows for some variation in the landings data between years without triggering the AM annually. Even still, the recreational landings are monitored annually against the recreational ACL to facilitate the application of the AM in years when it applies. Recreational landings would be evaluated relative to the recreational ACL as follows: for the year of implementation (I_0), only landings from I_0 would be compared to the recreational ACL and DWG complex ACL; in the year following implementation (I_1), the average of I_0 and I_1 landings would be compared to the average recreational ACL and DWG complex ACL for those two years; and in the second year following implementation and subsequent fishing years, the 3-year running average landings would be compared to the average recreational ACL and DWG complex ACL for the same three years. Using the average recreational ACL and DWG complex ACL for this alternative is necessary to account for instances when catch limits might change in the future, but the AM does not.

The probability of the recreational ACL being exceeded is discussed in Action 2 and in Table 2.2.1, which mirrors Table B.4 from Appendix B. Table 2.3.1 demonstrates, based on the last 10 years (2014 – 2023), when the AM would have been applied under **Preferred Alternative 4**. Table 3.3.1 applies the recreational fishing season duration analysis (Appendix B) relative to the proposed recreational ACLs in Action 2 and assumes that the commercial quota will be landed in each fishing year based on the data in Table 1.1.2. Even under the highest proposed recreational ACL (Preferred Alternative 3 in Action 2), there exists the possibility that the average recreational landings over a three-year period could exceed the recreational ACL.

Table 2.3.1. Demonstration of the annual application of the AM proposed in **Preferred Alternative 4** of Action 3 for the recreational sector, based on that sector's DWG landings from 2014 – 2023. Landings and ACLs are based in part on MRIP-FES and are in lb gw.

Year	Total Rec Landings	Rec ACL: Action 2 Alt 2	Comm Quota: Action 2 Alt 2	Complex ACL: Action 2 Alt 2	Action 3 Pref Alt 4 AM applied?	Rec ACL: Action 2 Pref Alt 3	Comm Quota: Action 2 Pref Alt 3	Complex ACL: Action 2 Pref Alt 3	Action 3 Pref Alt 4 AM applied?	Rec ACL: Action 2 Alt 4	Comm Quota: Action 2 Alt 4	Complex ACL: Action 2 Alt 4	Action 3 Pref Alt 4 AM applied?
2014	153,669	19,426	514,176	555,026		56,668	478,424	555,026		37,964	496,380	555,026	
2015	32,258	19,426	514,176	555,026		56,668	478,424	555,026		37,964	496,380	555,026	
2016	49,441	19,426	514,176	555,026		56,668	478,424	555,026		37,964	496,380	555,026	
2017	15,619	19,426	514,176	555,026	Yes	56,668	478,424	555,026	Yes	37,964	496,380	555,026	Yes
2018	101,224	19,426	514,176	555,026	No	56,668	478,424	555,026	No	37,964	496,380	555,026	No
2019	88,807	19,426	514,176	555,026	Yes	56,668	478,424	555,026	No	37,964	496,380	555,026	No
2020	57,491	19,426	514,176	555,026	Yes	56,668	478,424	555,026	No	37,964	496,380	555,026	Yes
2021	29,663	19,426	514,176	555,026	Yes	56,668	478,424	555,026	Yes	37,964	496,380	555,026	Yes
2022	38,848	19,426	514,176	555,026	Yes	56,668	478,424	555,026	No	37,964	496,380	555,026	Yes
2023	68,438	19,426	514,176	555,026	Yes	56,668	478,424	555,026	No	37,964	496,380	555,026	No

All alternatives in Action 3 are post-season AMs. However, **Preferred Alternative 4** is less likely to be triggered than **Alternative 2**, which requires only one overage of the recreational ACL to take effect. **Preferred Alternative 4** is also less likely to be triggered than **Alternative 3** which, despite also requiring both the recreational ACL and DWG complex ACL to be exceeded to be triggered, only requires an overage in the previous year. However, it should be noted that high outliers in landings, which are possible due to the imprecision and variability in the recreational data, have potential to result in triggering closures in future years, even when landings in those future years are normal or below normal. Based on the landings in Table 1.1.2, the proposed catch limits specified in Preferred Alternative 2 of Action 1, and on Alternatives 1-4 in Action 2, it is possible that the fishing season for the recreational sector under **Alternative 2** or **Alternative 3** in Action 3 would not continue for the full year as it has in previous years. The same is expected for **Preferred Alternative 4**, depending on the relationship between the recreational DWG landings and the recreational and DWG complex ACLs in the applicable three-year period.

Without proper consideration of ACLs and AMs for the recreational sector, overages of the recreational ACL may occur. It is common in these circumstances for overages of the complex ACL to occur due to the imprecision of the data available for fishing season projections (and particularly for recreational fishing seasons), and when the closure of the fishing season is scheduled. These fishing season projections are only as reliable as the data upon which they are based. These MRIP-FES data are presently only representative of Mississippi, Alabama, and Florida; Texas and Louisiana have separate recreational data collection programs for estimating recreational landings. The precision of the Texas and Louisiana programs with respect to DWG species has not yet been reviewed by the Council's SSC.

Council Conclusions:

The Council concluded that using a three-year simple moving average (**Preferred Alternative 4**) would help smooth out larger fluctuations in recreational landings. In discussion during its August 2025 meeting, the Council thought that the averaging approach in **Preferred Alternative 4** would incorporate past recent fishery performance and associated effects on biomass into the AM, which the Council found preferable for a complex with otherwise imprecise recreational landings data. This incorporation would be achieved by using the previous three years of fishery performance rather than a single year, which the Council concluded would better account for the uncertainty in the landings and the biological effects of those landings on the stock.

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Description of the Physical Environment

General Description of the Physical Environment

The physical environment for Gulf of America (Gulf) reef fish is detailed in the Environmental Impact Statement (EIS) for the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004), Generic EFH Amendment 3 (GMFMC 2005), and the Generic Annual Catch Limit/Accountability Measure (ACL/AM) Amendment (GMFMC 2011a), which are hereby incorporated by reference and summarized below.

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1).

Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73º F through 83º F (23-28º C), including bays and bayous (Figure 3.1.1), between 1982 and 2009, according to satellite-derived measurements (NODC 2011).[10] In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

[10] http://accession.nodc.noaa.gov/0072888

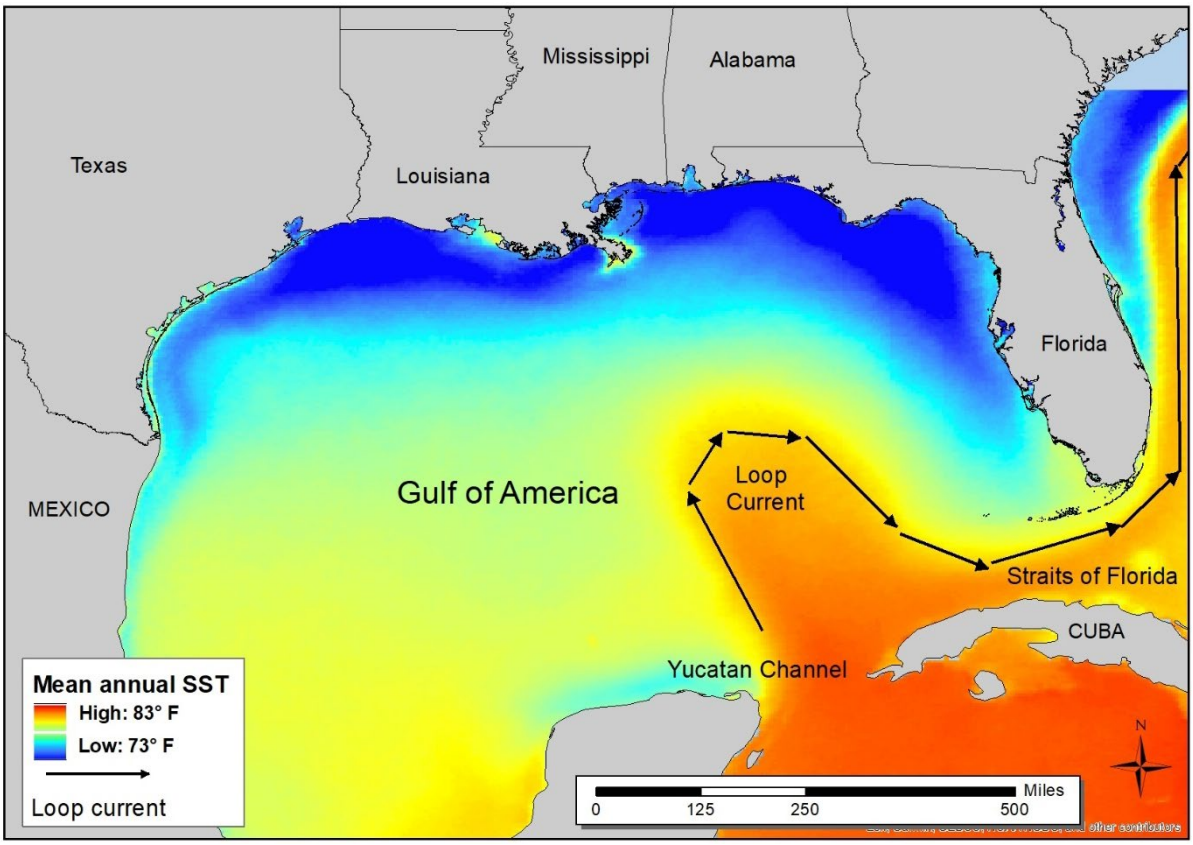

Figure 3.1.1. Mean annual sea surface temperature derived from the Advanced Very High-Resolution Radiometer Pathfinder Version 5 sea surface temperature data set.[11]

General Description of the Reef Fish Physical Environment

In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. They generally have a planktonic larval stage that lives in the water column and feeds on zooplankton and phytoplankton (GMFMC 2004). Juvenile and adult reef fish are typically demersal and usually associated with bottom topographies on the continental shelf (less than 100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. For example, some juvenile snapper (e.g., mutton, gray, red, dog, lane, and yellowtail snappers) and grouper (e.g., goliath, red, gag, and yellowfin groupers) are associated with inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems.

[11] https://www.ncei.noaa.gov/products/climate-data-records/pathfinder-sea-surface-temperature

Habitat Areas of Particular Concern (HAPC) and Environmental Sites of Special Interest

Detailed information pertaining to HAPCs is provided in Generic Amendment 3 (GMFMC 2005) and Amendment 9 to the Fishery Management Plan (FMP) for the Coral and Coral Reefs of the Gulf, U.S. Waters (GMFMC 2018). Detailed information pertaining to the Gulf area closures and marine reserves is provided in Amendment 32 to the FMP for the Reef Fish Resources in the Gulf (Reef Fish FMP; GMFMC 2011b). There are environmental sites of special interest that are discussed in the Generic EFH Amendment (GMFMC 2004) that are relevant to reef fish management. These documents are hereby incorporated by reference.

Northern Gulf Hypoxic Zone

A large hypoxic zone forms every summer in the northern Gulf. It is the result of allochthonous materials and runoff from agricultural lands resulting in increasing nutrient inputs to multiple rivers. These tributaries feed into the Mississippi River, which disperses to the Gulf, and creates a temperature and salinity dependent layering of waters. The nutrient rich fresh waters from the Mississippi create seasonal, large algal blooms at the surface that eventually die, sink to the bottom, and decompose. This creates the oxygen-poor, hypoxic, bottom water layer unless front or storm events occur, which allows for mixing of the layers (Rabalais and Turner 2019). Mapping of the hypoxic zone began in 1985. For 2021, the extent of the hypoxic area was 6,334 square miles, almost triple what it was in 2020 (2,116 square miles), but still less than the extent of the 2017 hypoxic area (8,776 square miles). The changes in hypoxic area can be attributed to changing amounts of river discharge and its associated nutrient load and storm events. The major factor for the reduced size in 2020 was the active storm season with Hurricane Hanna passing right over the zone, allowing for mixing of the waters. The 2021 hypoxia area was higher than the 5-year hypoxic area average (5,408 square miles) and much larger than the 1,930 square mile goal set by the Interagency Mississippi River and Gulf of America Hypoxia Task Force to be reached by 2035.[12] The hypoxic conditions in the northern Gulf directly impact less mobile benthic macroinvertebrates (e.g., polychaetes) by influencing density, species richness, and community composition (Baustian and Rabalais 2009; Breitburg et al. 2018). However, more mobile macroinvertebrates and demersal fishes are able to detect lower dissolved oxygen levels and move away from hypoxic conditions. Therefore, these organisms are indirectly affected by limited prey availability and constrained available habitat (Baustian and Rabalais 2009; Craig 2012).

Environmental Variability

Projections predict increases in sea-surface temperature and sea level; decreases in sea-ice cover; and changes in salinity, wave climate, and ocean circulation (Intergovernmental Panel on Climate Change). These changes are likely to affect plankton biomass and fish larvae abundance that could adversely impact fish, marine mammals, seabirds, and ocean biodiversity. Kennedy et al. (2002) and Osgood (2008) have suggested global climate variation could affect temperature

[12] http://gulfhypoxia.net

changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; change precipitation patterns and cause a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. The National Oceanic and Atmospheric Association (NOAA) Climate Web Portal predicts the average sea surface temperature in the Gulf will increase by approximately 2ºC for 2006-2100 compared to the average sea surface temperature from 1956-2005.

Deepwater Horizon MC252 Oil Spill

The presence of polycyclic aromatic hydrocarbons (PAH), which are highly toxic chemicals that tend to persist in the environment for long periods of time, in marine environments can have detrimental impacts on marine finfish, especially during the more vulnerable larval stage of development (Whitehead et al. 2012). When exposed to realistic, yet toxic levels of PAHs (1–15 µg/L), greater amberjack larvae develop cardiac abnormalities and physiological defects (Incardona et al. 2014). The future reproductive success of long-lived species, including red drum and many reef fish species, may be negatively affected by episodic events resulting in high-mortality years or low recruitment. These episodic events could leave gaps in the age structure of the population, thereby affecting future reproductive output (Mendelssohn et al. 2012). Other studies have described the vulnerabilities of various marine finfish species, with morphological and/or life history characteristics similar to species found in the Gulf, to oil spills and dispersants (Hose et al. 1996; Carls et al. 1999; Heintz et al. 1999; Short 2003).

Increases in histopathological lesions were found in red snapper in the area affected by the oil, but Murawski et al. (2014) found that the incidence of lesions had declined between 2011 and 2012. The occurrence of such lesions in marine fish is not uncommon (Sindermann 1979; Haensly et al. 1982; Solangi and Overstreet 1982; Khan and Kiceniuk 1984, 1988; Kiceniuk and Khan 1987; Khan 1990). Red snapper diet was also affected after the spill. A decrease in zooplankton consumed, especially by adults (greater than 400 mm total length) over natural and artificial substrates may have contributed to an increase in the consumption of fish and invertebrate prey – more so at artificial reefs than natural reefs (Tarnecki and Patterson 2015).

In addition to the crude oil, over a million gallons of the dispersant, Corexit 9500A®, was applied to the ocean surface and an additional hundreds of thousands of gallons of dispersant was pumped to the mile-deep wellhead (National Commission 2010). No large-scale applications of dispersants in deep water had been conducted until the *Deepwater Horizon* MC252 oil spill. Thus, no data exist on the environmental fate of dispersants in deep water. The effect of oil, dispersants, and the combination of oil and dispersants on fishes of the Gulf remains an area of concern.

3.2 Description of the Biological/Ecological Environment

The biological environment of the Gulf, including for deep-water grouper (DWG) species, is described in detail in the Generic EFH Amendment (GMFMC 2004) and the Generic ACL/AM Amendment (GMFMC 2011a), which are hereby incorporated by reference and summarized below.

Deep-water Grouper Biology

The Gulf DWG species are assumed to each be single stock units. All four species are protogynous hermaphrodites (SEDAR 85 2023), meaning that they begin life as female and can transition to male at older ages. When this transition occurs differs by species and is considered uncertain. Generally, eggs and larvae of DWG species are thought to be pelagic. Juvenile yellowedge grouper, snowy grouper, warsaw grouper, and speckled hind seek out reef structure (GMFMC 2011a). As adults, DWG species seek hardbottom habitat. Speckled hind will also seek out reefs, as will snowy grouper which, along with warsaw grouper, can be found on the shelf edge. Yellowedge grouper can reach a maximum age of 85 years, with 50% of females reaching sexual maturity by age-9 (SEDAR 85 2023). Given the depths at which DWG species are harvested (deeper than 100 meters or 330 feet), they are expected to be consistently vulnerable to barotrauma, and discard mortality is assumed to be near 100%.

Status of the Stock for DWG Species

See Chapter 1.1: Background, for more information. In summary, according to SEDAR 85 (2023), yellowedge grouper is not overfished but would be subject to overfishing as of 2021. Stock assessments have not been completed for snowy grouper, warsaw grouper, or speckled hind stocks in the Gulf.

Bycatch

Details of bycatch in the DWG portion of the reef fish fishery can be found in Appendix C to this document and is hereby incorporated by reference.

The DWG complex is part of the reef fish fishery, and DWG species may be captured incidentally while fishing for other species, especially other groupers and snappers which are known to be captured while targeting DWG. Lane snapper are undergoing overfishing, while both gag and greater amberjack are overfished. The overfished status of the DWG complex as a whole, meaning all four species combined, is unknown (National Marine Fisheries Service [NMFS] 4th quarter 2024 Update Summary of Stock Status for non-Federal Strategic Sourcing Initiative [FSSI] stocks).[13] However, the yellowedge grouper stock, which is a component of the DWG complex, was estimated to be undergoing overfishing in 2021 (SEDAR 85 2023). Minimum size limits are estimated to be the greatest source of regulatory discards for the

[13] https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates

majority of reef fish species, but there are no commercial or recreational size limits applicable to any DWG species. This amendment would reduce the DWG complex catch limits and implement accountability measures (AM) that are expected to shorten the recreational DWG fishing season duration (to date, the recreational season has never closed). This is expected to result in increased discards due to out of season catch, which may be a large source of regulatory DWG discards in the future. The recreational daily bag limit (1 speckled hind per person; 1 warsaw grouper per person; 4 yellowedge per person; 4 snowy grouper per person; as part of a 4-total grouper recreational daily bag limit) can also contribute to bycatch, albeit less substantially than other sources of regulatory discards like a closed season. Because DWG habitat and fishing grounds overlap with other commonly targeted reef fish species, like those in the mid-water snapper complex, catch (and potentially discards) of DWG complex species while targeting other species, and vice versa, may occur frequently. Interactions with other species such as sea turtles and sea birds are known to occur in general in the reef fish fishery but are minimal (see next section).

The analysis in Appendix C considers measures that are expected to affect DWG discard mortality due to reducing allowable catch and changing accountability measures for the recreational sector, resulting in a shortened recreational season. However, there is some biological benefit to the DWG complex that outweighs any increases in discards because these measures allow more fish to remain in the water due to the reduced catch limit and an expected reduction in the open fishing season duration. Ultimately, overall mortality of the DWG complex would be expected to be substantially lower under this rule due to the expected reduction in the duration of the recreational fishing season resulting from the reduced catch limits and new accountability measures.

Protected Species and Protected Species Bycatch

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). A brief summary of these two laws and more information is available on NMFS Office of Protected Resources website.[14] ESA-listed species or Distinct Population Segments (DPS) of marine mammals, sea turtles, fish, and corals occur in the exclusive economic zone (EEZ) of the Gulf. There are numerous stocks of marine mammals managed within the Southeast region. All marine mammals in U.S. waters are protected under the MMPA.

The five whale species that may be present in the Gulf (blue, sperm, sei, fin, and Rice's[15]) are listed as endangered under the ESA. Rice's whales are the only resident baleen whales in the Gulf. Manatees, listed as threatened under the ESA, also occur in the Gulf and are the only marine mammal species in this area managed by the U.S. Fish and Wildlife Service.

[14] https://www.fisheries.noaa.gov/about/office-protected-resources

[15] The Rice's whale (*Balaenoptera ricei*) was previously classified as the Gulf Bryde's whale but was later identified as morphologically and genetically distinct from other whales under the Bryde's whale complex, warranting classification as a new species of baleen whale living in the Gulf.

Sea turtles, fish, and corals that are listed as threatened or endangered under the ESA occur in the Gulf. These include the following: five species of sea turtles (Kemp's ridley, loggerhead (Northwest Atlantic Ocean DPS), green, leatherback, and hawksbill); five species of fish (Gulf sturgeon, smalltooth sawfish, Nassau grouper, oceanic whitetip shark, and giant manta ray); and six species of coral (elkhorn, staghorn, lobed star, mountainous star, boulder star, and rough cactus). Critical habitat designated under the ESA for smalltooth sawfish, Gulf sturgeon, and the Northwest Atlantic Ocean DPS of loggerhead sea turtles occur in the Gulf, though only loggerhead critical habitat occurs in federal waters. Critical habitat has been proposed in the Gulf for the North Atlantic DPS of green sea turtles.

The most recent biological opinion (BiOp) for the fishery management plan (FMP) was completed on September 30, 2011. The BiOp determined the operation of the Gulf reef fish fishery managed under the Reef Fish FMP is not likely to adversely affect ESA-listed marine mammals or coral and was not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish. Since issuing the opinion, in memoranda dated September 16, 2014, and October 7, 2014, NMFS concluded that the activities associated with the Reef Fish FMP are not likely to adversely affect critical habitat for the Northwest Atlantic Ocean loggerhead sea turtle DPS and four species of corals (lobed star, mountainous star, boulder star, and rough cactus).

On April 6, 2016, NMFS and the U.S. Fish and Wildlife Service published a final rule (81 FR 20057) removing the range-wide and breeding population ESA-listings of the green sea turtle and listing eight DPSs as threatened and three DPSs as endangered. The North Atlantic DPS of green sea turtle occurs in the Gulf and is listed as threatened. In addition, on June 29, 2016, NMFS published a final rule (81 FR 42268) listing Nassau grouper as threatened under the ESA. NMFS has reinitiated consultation on the FMP to address these listings. In a memorandum dated September 29, 2016, NMFS determined that fishing under the Reef Fish FMP during the re-initiation period is not likely to jeopardize the continued existence of the North Atlantic DPS of green sea turtles or Nassau grouper.[16]

On January 22, 2018, NMFS published a final rule (83 FR 2916) listing the giant manta ray as threatened under the ESA. On January 30, 2018, NMFS published a final rule (83 FR 4153) listing the oceanic whitetip shark as threatened under the ESA. In a memorandum dated March 6, 2018, NMFS revised the request for re-initiation of consultation on the Reef Fish FMP to address the listings of the giant manta and oceanic whitetip. In that memorandum, NMFS also determined that fishing under the Reef Fish FMP during the extended re-initiation period will not jeopardize the continued existence of the giant manta ray, oceanic whitetip shark, Nassau grouper, or the North Atlantic and South Atlantic DPSs of green sea turtles.

[16] The memo also addressed the South Atlantic DPS of green sea turtle because at that time, NMFS thought that individuals from that DPS would be found in the Gulf based on a study that found that approximately 5% of the turtles sampled off the Atlantic coast of Florida came from the South Atlantic DPS. However, with additional research, NMFS has determined that South Atlantic juveniles are not likely to be occurring in U.S. mainland coastal waters in anything more than negligible numbers.

NMFS published a final rule on April 15, 2019, listing the Gulf Bryde's whale (now Rice's whale, see footnote 14 above) as endangered. In a memorandum dated June 20, 2019, NMFS revised the re-initiation request to include the Gulf Bryde's whale (Rice's whale) and determined that fishing under the Reef Fish FMP during the re-initiation period will not jeopardize the continued existence of any of the newly listed species discussed above.[17]

There is no information to indicate marine mammals and birds rely on DWG species for food, and they are not generally caught by fishermen harvesting DWG species. The primary gear used to harvest DWG species is hook-and-line and bottom longlines. These gear types are classified in the proposed 2025 Marine Mammal Protection Act List of Fisheries as a Category III fishery (89 FR 77789; September 24, 2024), meaning the annual mortality and serious injury of a marine mammal resulting from the fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Additionally, there is no evidence that the Gulf DWG portion of the reef fish fishery as a whole is adversely affecting seabirds. Dolphins are the only species documented as interacting with the reef fish fishery. Bottlenose dolphin prey upon bait, catch, and/or discarded fish from the reef fish fishery.

[17] The official change to the name has no effect on NMFS's conclusion that the activities associated with the Reef Fish FMP will not jeopardize the continued existence of the species during the revised reinitiation period.

3.3 Description of the Economic Environment

3.3.1 Commercial Sector

Permits

Any fishing vessel that harvests and sells any of the reef fish species managed under the Reef Fish FMP from the Gulf EEZ must have a valid Gulf reef fish permit. As of July 8, 2021, there were 825 limited access valid or renewable reef fish permits (SERO Permits Database, May 2022). Note more recent permit information is currently unavailable. In order to harvest DWG, a vessel permit must also be linked to an individual fishing quota (IFQ) account and possess sufficient allocation for this species. IFQ accounts can be opened, and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive DWG allocation from other IFQ participants. On average from 2019 through 2023, there were 451 IFQ accounts that held DWG allocation and 70% of those held DWG shares (NMFS 2024b).

Although many fishing businesses only own one permitted vessel, some hold or own multiple permits and vessels. Detailed discussions on the business composition of IFQ participants are provided in the description of the economic environment sections of Amendment 53 (GMFMC 2021b) and Amendment 56 (GMFMC 2023) and are incorporated herein by reference.

Commercial harvest of reef fish in the EEZ may only be sold to dealers with a federal dealer permit. As of December 21, 2021, there were 341 entities with a federal Gulf and South Atlantic Dealers (GSAD) permit (J. Dudley, NMFS SERO, pers. comm. 2022). In order to purchase IFQ species, including DWG, dealers are also required to have a Gulf IFQ dealer endorsement. As of July 22, 2022, there were 166 eligible IFQ dealers; however, the total number of dealers can vary over the course of the year and from year to year.

Vessels, Landings, and Dockside Revenue

The information in Table 3.3.1.1 describes the landings and revenue for vessels that harvested DWG each year from 2019 through 2023, including their revenue from other IFQ species, Gulf non-IFQ fisheries, and South Atlantic fisheries. The number of vessels that harvested DWG varied from year to year with a notable increase in vessel participation from 2022 to 2023 (Table 3.3.1.1). On average, DWG comprised approximately 10% of vessels' total annual ex-vessel revenue, and IFQ species, in general, comprised 91% of revenue. DWG landings and ex-vessel revenue trended downwards during 2019 through 2023, with overall decreases of 37% and 36% respectively. Although not shown in the table, the maximum annual gross revenue earned by a single vessel from 2019 through 2023 was approximately $4.56 million (2024 dollars) in 2023.

Table 3.3.1.1. Landings and revenue statistics for vessels harvesting DWG species (2024 dollars). *

Year	# of Vessels	DWG landings in pounds (lb) gutted weight (gw)	DWG ex-vessel revenue	Other IFQ species ex-vessel revenue	Gulf Non-IFQ species ex-vessel revenue	South Atlantic all species ex-vessel revenue	Average ex-vessel revenue per vessel
2019	147	951,729	$6,429,093	$36,723,017	$4,722,740	$325,993	$327,897
2020	147	803,754	$4,922,333	$38,427,301	$3,318,671	$101,618	$318,163
2021	134	800,427	$5,111,374	$40,626,717	$3,686,721	$156,549	$370,010
2022	138	559,908	$3,841,927	$42,304,207	$3,813,889	$389,466	$364,851
2023	160	601,633	$4,146,089	$46,949,771	$4,838,528	$310,296	$351,529
Average	145	743,490	$4,890,163	$41,006,203	$4,076,110	$256,784	$346,490

Source: NMFS SERO IFQ database (accessed 5/1/2024) and Southeast Fisheries Science Center (SEFSC) Socioeconomic Panel (January 2025 version).
*Includes scamp landed using DWG quota under the DWG/SWG flexibility measures established in Amendment 29 to the Reef Fish FMP (GMFMC 2009).

IFQ Share Transfer, IFQ Allocation Transfer, and Ex-vessel Prices

Price information is important for evaluating the performance of a catch share program. Theoretically, allocation prices should reflect the expected annual profit from harvesting one unit of quota, whereas share prices should reflect the net present value of the expected profit from harvesting one unit of quota in the long run. Dockside or ex-vessel price is the price the vessel receives at the first sale of harvest. Average share transfer[18] prices fluctuated from 2019 through 2023; whereas allocation transfer prices and ex-vessels prices remained relatively flat (Table 3.3.1.2). The average ex-vessel price increased by 2% overall during this period; the average allocation transfer price declined by 14%; and the average share price increased by 10%.

[18] Share transfer price refers to the price paid to purchase a share percentage that equates to one pound of DWG allocation at the time the transfer occurs (NMFS 2024a).

Table 3.3.1.2. Average DWG share transfer, allocation transfer, and ex-vessel prices per pound-gutted weight in 2024 dollars.

Year	Share Transfer	Allocation Transfer	Ex-Vessel
2019	$11.01	$1.26	$6.76
2020	$16.59	$1.25	$6.25
2021	$12.67	$1.18	$6.47
2022	$12.66	$1.24	$6.90
2023	$12.15	$1.08	$6.90
Average	$13.01	$1.20	$6.66

Source: NMFS (2024b).

Estimates of economic returns for vessels that harvested DWG during 2019 through 2023 are provided by Liese (2023).[19] Liese (2023) generated annual vessel-level estimates of costs (as a percentage of revenue) and net revenue from operations for vessels that harvested "Deep Water Groupers" in the Gulf. Estimates of producer surplus (PS) can be calculated from the cost information contained in Liese (2023) in conjunction with estimates of annual revenue from the SERO IFQ database and the SEFSC Social Science Research Group (SSRG) Socioeconomic Panel. PS is total annual revenue minus variable costs, including the costs for fuel, other supplies, and hired crew, as well as 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 variable and fixed costs, including the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, and overhead, as well as the opportunity cost of an owner's time as captain and the vessel's depreciation. According to Liese (2023), PS for commercial vessels that harvested Gulf DWG was approximately 53.7% of their annual gross revenue, on average, from 2014 through 2018. Net revenue from operations was 39.9% of their annual gross revenue, on average, during this period. Applying these percentages to the results provided in Table 3.3.1.1 would result in an estimated per vessel average annual PS of $186,065 (2024 dollars) and an average annual net revenue from operations of $138,250 per year. Liese (2023) also provides annual trip-level estimates of costs (as a percentage of trip revenue) and trip net revenue for vessels that harvested snappers and groupers in the South Atlantic. According to Liese (2023), labor, including both hired and owner's time, consumed 31.2% of trip revenue and fuel and supplies consumed 17%, leaving a trip net revenue margin of 51.8%, on average, from 2014 through 2018.

Dealers

The information in Table 3.3.1.3 illustrates the purchasing activities of dealers that bought DWG landed from vessels during 2019 through 2023. Like vessels, dealer participation in the DWG IFQ program is fluid, and not all dealers purchased DWG in each year during this time. On average, from 2019 through 2023, IFQ purchases comprised 53% of all purchases made by these

[19] This report is available at: https://repository.library.noaa.gov/view/noaa/56480.

dealers, with DWG species, in particular, accounting for 5% of total purchases. The average annual value of total purchases by these dealers trended upwards during the period (Table 3.3.1.3). Although not shown in the table, the maximum annual value of all purchases made by a single dealer from 2019 through 2023 was approximately $16 million (2024 dollars) in 2022.

Table 3.3.1.3. Purchase statistics for dealers that bought DWG (2024 dollars).

Year	Number of Dealers	DWG Purchases	Other IFQ Purchases	Gulf Non-IFQ Purchases	South Atlantic Purchases	Average total purchases per dealer
2019	64	$6,924,772	$52,191,864	$39,803,936	$18,490,169	$1,834,543
2020	53	$5,020,551	$49,624,916	$28,733,564	$15,375,093	$1,863,285
2021	49	$5,312,767	$55,504,332	$36,002,437	$14,714,454	$2,276,204
2022	50	$3,935,962	$57,421,956	$35,846,142	$23,139,766	$2,406,877
2023	43	$4,327,616	$57,711,522	$33,369,179	$19,207,847	$2,665,492
Average	52	$5,104,333	$54,490,918	$34,751,052	$18,185,466	$2,209,280

Source: SEFSC Fishing Communities Web Query Tool (Version Feb 11, 2025, Years: 2014-2023).

Keithly and Wang (2018) estimated the mark-ups between the ex-vessel price and the dealer sales price for red snapper, dolphin, red grouper, and an "Other Groupers" category, which includes black grouper, gag, yellowedge grouper, and warsaw grouper. However, those estimates are insufficient to estimate PS or profit for DWG dealers, or changes to such as a result of regulatory changes, because costs other than the raw fish costs (which are equivalent to the ex-vessel value) are not considered. NMFS does not possess estimates of operating costs for DWG dealers or seafood dealers more broadly, therefore, is not able to estimate profit, net cash flow, net revenue from operations, or PS for dealers as estimated for commercial vessels. However, it is likely that the harvest of DWG generates some PS and profit for DWG dealers. Further, because of federal dealers' ability to switch to purchasing other species, changes to those values because of the management measures considered in this amendment are likely to be relatively small. Subsequently, any additional PS and profit generated from DWG sales further up the distribution chain to wholesalers/distributors, grocers, and restaurants is likely minimal, given the vast number of seafood and other products they handle and their even greater ability to shift to purchasing other products.

Imports

Imports of foreign seafood products compete within the domestic seafood market, and in the U.S., imports dominate many segments of that market. Imports also tend to be price setters (products that are able to set prices in a market, due to the influence of having a majority of market share). Seafood imports can have downstream effects on the local fish market. At the harvest level, imports can affect ex-vessel prices fishermen receive for landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. Imports that directly compete with domestic reef fish, including DWG, are described in this section.

Groupers

According to NMFS' foreign trade data,[20] groupers are not exported. Imports of fresh and frozen grouper products, which also directly compete with domestic harvest of snapper and grouper species are described in this section. As shown in Table 3.3.1.4, imports of fresh grouper products peaked in 2023. Total value of fresh grouper imports has been increasing in recent years and averaged $67.0 million annually. The average price per pound (lb) product weight (pw) for fresh grouper products was $5.91 from 2019 through 2023, and these products primarily originated from Mexico, Brazil, and Panama.

Table 3.3.1.4. Annual pounds and value of fresh grouper imports and share of imports by country, 2019 - 2023.

	2019	2020	2021	2022	2023
Pounds of fresh Grouper imports (product weight, million pounds)	11.3	10.4	12.2	11.7	12.6
Value of fresh Grouper imports (millions $, 2024$)	71.1	53.7	72.5	69.4	68.2
Average price per lb (2024$)	$6.50	$5.34	$6.14	$6.14	$5.42
Share of Imports by Country					
Mexico	57.9	67.6	54.4	44	45
Brazil	16.9	12.3	18.1	23.9	19.8
Panama	8.1	8	10.9	13.4	12.7
All others	17	12.2	16.6	18.7	22.4

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

As shown in Table 3.3.1.5, imports of frozen grouper products peaked at 3.5 million lb pw in 2019 declining to a low of 0.8 million lb pw in 2020. Total revenue from frozen grouper decreased from 2019 to 2020 but increased to $6.0 million in 2021. The average price per lb pw for frozen grouper products was $2.28 from 2019-2023. Imports of frozen grouper products primarily originated in Brazil, Suriname, and Indonesia in 2019 through 2022.

[20] https://www.fisheries.noaa.gov/foss/

Table 3.3.1.5. Annual pounds and value of frozen grouper imports and share of imports by country, 2019 - 2023.

	2019	2020	2021	2022	2023
Pounds of frozen Grouper imports (product weight, million pounds)	3.5	0.8	2.2	1.3	1.2
Value of frozen Grouper imports (millions $, 2024$)	5.7	1.8	6.0	3.1	2.7
Average price per lb (2024$)	$1.69	$2.27	$2.85	$2.36	$2.22
Share of Imports by Country					
Brazil	79.2	33.7	23.5	26.2	14
Suriname	11.2	25.9	30.6	16.2	0
Indonesia	3	1.1	22.2	5.9	0
All others	6.5	39.3	23.7	51.7	86

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

Snappers

According to NMFS' foreign trade data, DWG and other reef fish species are not exported from the U.S. to other countries. Imports of fresh and frozen snapper products, which directly compete with domestic harvest of snapper species are described in this section. As shown in Table 3.3.1.6, imports of fresh snapper products were 32.8 million lb pw in 2019. They peaked at 36.0 million lb pw in 2021. Total revenue from snapper imports increased to a five-year high of $187.5 million in 2021 (2024$). The average price per pound for fresh snapper products was $4.92 from 2019-2023 and prices varied over this period. Imports of fresh snapper products primarily originated in Mexico, Nicaragua, or Panama, entering the U.S. through the port of Miami.

Table 3.3.1.6. Annual pounds and value of fresh snapper imports and share of imports by country, 2019 - 2023. All monetary estimates are in 2024$.

	2019	2020	2021	2022	2023
Pounds of fresh Snapper imports (product weight, million pounds)	32.8	32.4	36	32.2	32.1
Value of fresh Snapper imports (millions $, 2024$)	154.5	150.0	187.5	156.4	142.6
Average price per lb (2024$)	$4.89	$4.80	$5.40	$5.04	$4.44
Share of Imports by Country					
Mexico	34.9	40.4	32.8	31.2	32.3
Nicaragua	13.9	15.1	13.3	14.9	14.4
Panama	14.6	11	14	10.6	10.3
All others	36.6	33.5	39.9	43.4	42.8

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

As shown in Table 3.3.1.7, total revenue from imports of frozen snapper increased from $49.1 million (2024$) in 2019 to a five-year high of $84.0 million in 2021 (2024$) followed by a 49% decrease through 2023. The average price per pound for frozen snapper products was $4.31, with a notable decrease in 2023. Frozen snapper product imports primarily originated in Brazil or Suriname and entered through the port of Miami.

Table 3.3.1.7. Annual pounds and value of frozen snapper imports and share of imports by country, 2019 - 2023.

	2019	2020	2021	2022	2023
Pounds of frozen Snapper imports (product weight, million pounds)	11.4	15.9	18.2	16.9	11.7
Value of frozen Snapper imports (millions $, 2024$)	49.1	64.0	84.0	73.4	42.5
Average price per lb (2024$)	$4.47	$4.17	$4.78	$4.49	$3.64
Share of Imports by Country					
Brazil	54.6	55.4	58.6	64.1	60.6
Suriname	13.5	10.3	10.5	5.5	12.3
Indonesia	6.8	5.4	3.9	8.0	7.0
All others	25	28.9	27	22.4	20.1

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

Business Activity

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, such as grouper 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 and services. As a result, the analysis presented below represents a distributional analysis that only shows how economic impacts may be distributed through regional markets. It should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

Economic impact models can be used to determine the sources of the impacts. Each impact can be broken down into direct, indirect, and induced economic impacts. “Direct” economic impacts are the results of the money initially spent in the study area (e.g., country, region, state, or community) by the fishery or industry being studied. This includes money spent to pay for labor, supplies, raw materials, and operating expenses. The direct economic impacts from the initial spending create additional activity in the local economy, i.e., “indirect” economic impacts. Indirect economic impacts are the results of business-to-business transactions indirectly caused by the direct impacts. For example, businesses initially benefiting from the direct impacts will subsequently increase spending at other local businesses. The indirect economic impact is a

measure of this increase in business-to-business activity, excluding the initial round of spending which is included in the estimate of direct impacts. "Induced" economic impacts are the results of increased personal income caused by the direct and indirect economic impacts. For example, businesses experiencing increased revenue from the direct and indirect impacts will subsequently increase spending on labor by hiring more employees, increasing work hours, raising salaries/wage rates, etc. In turn, households will increase spending at local businesses. The induced impact is a measure of this increase in household-to-business activity.

Estimates of the U.S. average annual business activity associated with the commercial harvest of all Gulf reef fish species were derived using the model developed for and applied in NMFS (2024a)[21] and are provided in Table 3.3.1.8. Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of DWG IFQ species from 2019 through 2023. This business activity is characterized as jobs (full- and part-time equivalents), 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.

The results provided here should be interpreted with caution. The results are based on average relationships developed through the analysis of many fishing operations that harvest many different species.

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

Table 3.3.1.8. Average annual business activity (2019 - 2023) associated with the commercial harvest of DWG species in the Gulf. All monetary estimates are in thousands of dollars for 2024.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	90	14	18	122
Income impacts	$2,640	$490	$1,185	$4,315
Total value-added impacts	$2,814	$1,765	$2,028	$6,607
Output Impacts	$4,890	$3,978	$3,937	$12,805
Primary dealers/processors	Direct	Indirect	Induced	Total
Employment impacts	19	7	13	39
Income impacts	$861	$794	$751	$2,406
Total value-added impacts	$918	$1,013	$1,414	$3,345
Output impacts	$2,773	$2,088	$2,763	$7,624
Secondary wholesalers/ distributors	Direct	Indirect	Induced	Total
Employment impacts	9	2	8	19
Income impacts	$513	$153	$540	$1,206
Total value-added impacts	$547	$256	$922	$1,725
Output impacts	$1,375	$501	$1,793	$3,669
Grocers	Direct	Indirect	Induced	Total
Employment impacts	37	4	8	50
Income impacts	$1,056	$351	$530	$1,936
Total value-added impacts	$1,125	$565	$897	$2,587
Output impacts	$1,804	$918	$1,761	$4,483
Restaurants	Direct	Indirect	Induced	Total
Employment impacts	232	15	38	285
Income impacts	$4,235	$1,284	$2,426	$7,944
Total value-added impacts	$4,514	$2,296	$4,087	$10,896
Output impacts	$8,254	$3,592	$8,064	$19,911
Harvesters and seafood industry	Direct	Indirect	Induced	Total
Employment impacts	386	43	86	515
Income impacts	$9,305	$3,072	$5,431	$17,808
Total value-added impacts	$9,918	$5,894	$9,347	$25,160
Output impacts	$19,095	$11,078	$18,319	$48,491

Source: Calculated by NMFS SERO using the model developed for and applied in NMFS (2024a).

3.3.2 Recreational Sector

The recreational sector is composed 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 vessels and headboats (also called party boats). Charter vessels 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 because larger concentrations of fish are required to satisfy larger groups of anglers.

Angler Effort

Recreational effort derived from the MRIP database can be characterized in terms of the number of angler 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.

- Total recreational trips - The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

Other measures of effort are possible, such as directed trips (the number of individual angler trips that either targeted or caught a particular species). Estimates of target or catch effort for individual species and additional years, as well as other measures of directed effort, are available via NMFS' MRIP query tool.[22]

Tables 3.3.2.1 and 3.3.2.2 describe the recreational target and catch trips for DWG complex species (yellowedge grouper, snowy grouper, warsaw grouper, and speckled hind) in the Gulf from 2019 through 2023. There were no recorded target trips in Texas for these species and Louisiana data are currently unavailable. The overall number of target and catch trips recorded for DWG species were very low at 2,435 and 18,065, respectively, on average. Private vessels comprised the majority of DWG target and catch trips and these trips occurred almost entirely in federal waters off Alabama and Florida (Table 3.3.2.1 and Table 3.3.2.2). Because DWG

[22] https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries

complex species are rare event species in MRIP, the estimates presented in this section are imprecise[23] and should be viewed accordingly.

Table 3.3.2.1. DWG complex recreational target trips, by mode and state, 2019 - 2023.

	Alabama	Florida	Mississippi	Total
	Charter Mode			
2019	0	0	0	0
2020	0	0	0	0
2021	0	0	0	0
2022	94	204	0	299
2023	0	0	0	0
Average	19	41	0	60
	Private/Rental Mode			
2019	0	1,259	0	1,259
2020	0	683	0	683
2021	0	3,079	0	3,079
2022	0	1,739	0	1,739
2023	5,117	0	0	5,117
Average	1,023	1,352	0	2,375
	All Modes			
2019	0	1,259	0	1,259
2020	0	683	0	683
2021	0	3,079	0	3,079
2022	94	1,943	0	2,038
2023	5,117	0	0	5,117
Average	1,042	1,393	0	2,435

Source: MRIP database, SERO, NMFS (July 2025).
Note: Louisiana, Texas, and headboat information is currently unavailable.

[23] Percent standard errors (PSE) for annual aggregate DWG effort estimates during 2019-2023 range from 57 to 100 for target trips and 31 to 55 for catch trips. Estimates at the state level are even less precise.

Table 3.3.2.2. DWG complex recreational catch trips, by mode and state, 2019 - 2023.

	Alabama	Florida	Mississippi	Total
	Charter Mode			
2019	0	12757	0	12,757
2020	474	2,815	0	3,289
2021	120	2,188	0	2,309
2022	683	9,121	0	9,805
2023	860	2,202	0	3,062
Average	427	5,817	0	6,244
	Private/Rental Mode			
2019	1,793	4,657	297	6,747
2020	3,101	8,014	0	11,115
2021	0	2,809	0	2,809
2022	1,623	0	0	1,623
2023	1,197	35,611	0	36,809
Average	1,543	10,218	59	11,821
	All Modes			
2019	1,793	17,414	297	19,504
2020	3,575	10,830	0	14,404
2021	120	4,997	0	5,118
2022	2,306	9,121	0	11,427
2023	2,057	37,813	0	39,871
Average	1,970	16,035	59	18,065

Source: MRIP database, SERO, NMFS (July 2025).
Note: Louisiana, Texas, and headboat information is currently unavailable.

Similar analysis of recreational effort is not possible for the headboat mode in the Gulf because headboat data are not collected at the angler level. Estimates of effort by the headboat mode are provided in terms of angler days, or the number of standardized full-day angler trips.[24] The stationary "fishing for demersal (bottom-dwelling) species" nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or reef fish trips by intent.

Headboat angler days have been variable across the Gulf states from 2019 through 2023, but there were no well-defined trends (Table 3.3.2.3). On average (2019 - 2023), Florida accounted for the majority of headboat angler days reported, followed by Texas and Alabama; Mississippi

[24] Headboat trip categories include half-, three-quarter-, full-, and 2-day trips. A full-day trip equals one angler day, a half-day trip equals 0.5 angler days, etc. Angler days are not standardized to an hourly measure of effort and actual trip durations may vary within each category.

and Louisiana combined accounted for only a small percentage (Table 3.3.2.3). Headboat effort in terms of angler days for the entire Gulf tended to be concentrated most heavily during the summer months of June through August (Figure 3.3.2.1).

Table 3.3.2.3. Gulf headboat angler days and percent distribution by state (2019 - 2023).

	Angler Days				Percent Distribution			
	FL	**AL**	**MS-LA***	**TX**	**FL**	**AL**	**MS-LA**	**TX**
2019	161,564	18,607	2,632	52,456	68.7%	7.9%	1.1%	22.3%
2020	126,794	13,091	1,728	51,498	65.7%	6.8%	0.9%	26.7%
2021	181,632	13,844	3,197	71,344	67.3%	5.1%	1.2%	26.4%
2022	164,872	14,751	3,679	65,634	66.2%	5.9%	1.5%	26.4%
2023	149,735	12,513	3,244	58,279	66.9%	5.6%	1.4%	26.0%
Average	156,919	14,561	2,896	59,842	66.9%	6.3%	1.2%	25.6%

Source: NMFS SRHS (2023).
*Headboat data from Mississippi and Louisiana are combined for confidentiality purposes.

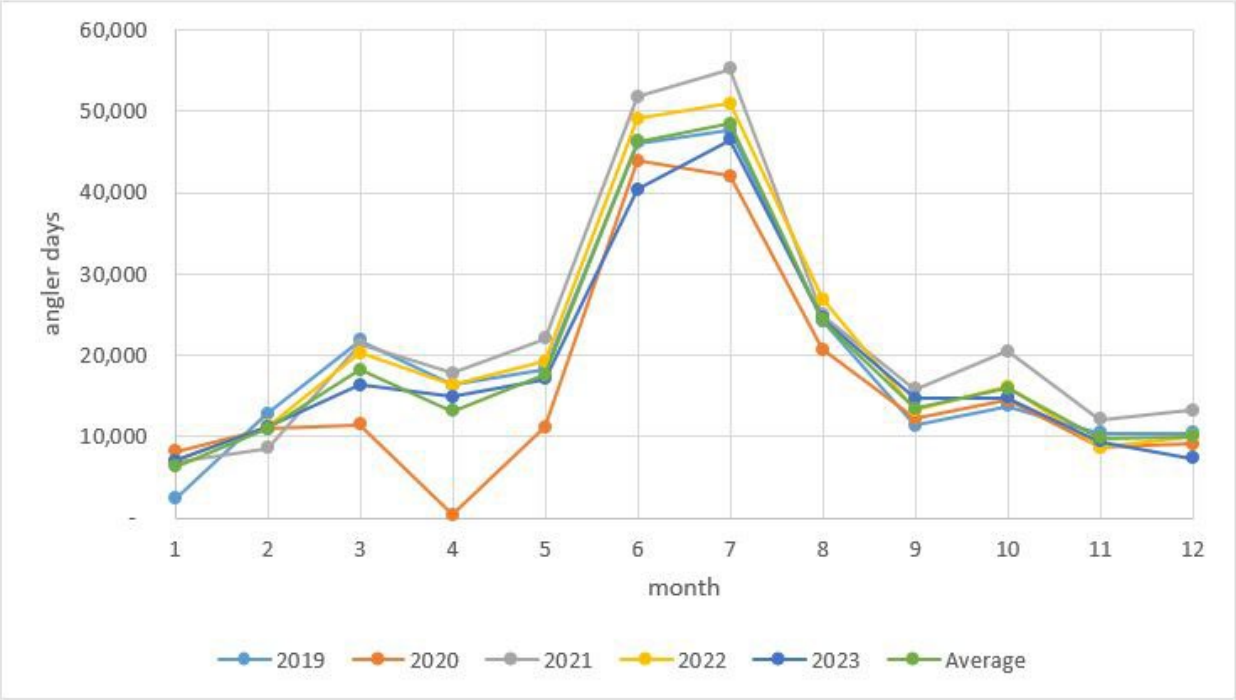

Figure 3.3.2.1. Gulf headboat angler days by month and year (2019 - 2023).
Source: NMFS SRHS (2023).

Permits

There are no specific federal permitting requirements for private recreational anglers to fish for or harvest DWG species, including yellowedge grouper, snowy grouper, warsaw grouper, and speckled hind. The same is true for private recreational vessel owners. Instead, private anglers

are required either to possess a state recreational fishing permit that authorizes saltwater fishing in general, or to be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual private anglers or private recreational vessels would be expected to be affected by the actions in this amendment.

For anglers to fish for or possess reef fish species in or from the Gulf EEZ on for-hire vessels, those vessels are required to have a Gulf charter/headboat permit for reef fish (Gulf reef fish for-hire permit). As of August 26, 2021, there were 1,273 valid or renewable[25] Gulf reef fish for-hire permits. The total number of valid or renewable Gulf reef fish for-hire permits has been relatively stable with less than a 1% change from year to year during 2016 through 2020 (Table 3.3.2.4). Note more recent permit information is currently unavailable.

Although the permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, if a vessel meets the selection criteria used by the Southeast Region Headboat Survey (SRHS) and is selected to report by the Science Research Director of the SEFSC, it is determined to operate primarily as a headboat and is required to submit harvest and effort information to the SRHS. During 2024, 73 Gulf headboats were registered in the SRHS (R. Cheshire, NMFS SEFSC, pers. comm. 2025). The majority of these headboats were located in Florida (44), followed by Texas (18), Alabama (7), and Mississippi/Louisiana (4).

Table 3.3.2.4. Number of valid or renewable Gulf reef fish for-hire permits, 2016 - 2020.

Year	Number of Permits
2016	1,282
2017	1,280
2018	1,279
2019	1,277
2020	1,289

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database (accessed 05/17/22).

[25] A renewable permit is an expired permit that may not be actively fished but is renewable for up to one year after expiration.

Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is consumer surplus (CS), which is the difference between the maximum amount an angler would be willing to pay for a fish and the amount they actually do pay.[26] CS represents a savings of one's income that can be spent later on other goods and services, leading to an overall increase in utility or satisfaction for the angler and a benefit to the economy. All else equal, the amount anglers are willing to pay, and the costs of fishing can vary depending on expected catch rates, harvest rates, and existing regulations. The economic value of changes in expected catch rates, harvest rates, or existing regulations can be measured by any associated changes in CS. However, because recreationally caught fish are non-market goods and there are no transaction data available, CS cannot be measured directly. Instead, using survey elicitation methods and stated or revealed preference models, it is possible to estimate willingness to pay (WTP) values[27] that are a close approximation to the individual CS an angler would derive from an additional fish that is caught and kept. Direct estimates of the WTP for yellowedge grouper, snowy grouper, warsaw grouper, and speckled hind are not currently available. There are, however, estimates for grouper species in general. Haab et al. (2012) estimated the WTP for one additional grouper caught and kept in the southeastern U.S. using four separate econometric modeling techniques. The finite mixture model, which considers variation in the preferences of fishermen, had the best prediction rates of the four models and, as such, was selected for presentation here. The mean WTP for an additional grouper was estimated to be $168.76 (2024$). Another study estimated the mean WTP for catching and keeping a second grouper on an angler trip at approximately $131 (2024$) and lower thereafter (approximately $87 for a third grouper, $64 for a fourth grouper, and $51 for a fifth grouper) (Carter and Liese 2012). For the purposes of this amendment, the $131 per fish estimate is assumed to be the best value to use for estimating the CS associated with catching and keeping a species in the DWG complex. The higher value provided by Haab et al. (2012) is likely less reasonable for these particular species.

Economic value for the for-hire component of the recreational sector can be measured in many ways. According to Savolainen et al. (2012), the average charter vessel operating in the Gulf is estimated to receive approximately $107,000 (2024$) in gross revenue and $32,000 (2024$) in net income (gross revenue minus variable and fixed costs) annually. The average headboat is estimated to receive approximately $325,000 (2024$) in gross revenue and $95,000 (2024$) in net income annually. More recent estimates of average annual gross revenue for Gulf headboats are provided in Abbott and Willard (2017) and D. Carter, SEFSC, pers. comm. 2018. Abbott and Willard (2017) suggest that Savolainen, et al.'s estimate of average annual gross revenue for headboats may be an underestimate, as data in the former suggest that average gross revenue in 2009 for the vessels in their sample was about $575,000 (2024$). Further, their data suggest average annual gross revenue per vessel had increased to about $694,000 (2024$) by

[26] Holding income and the prices of other goods constant.
[27] These are measures of compensating surplus, or the amount of money that an angler would be willing to pay in order to harvest the additional fish, while maintaining the same level of utility.

2014. However, Abbott and Willard's estimates are based on a sample of 17 headboats that chose to participate in the headboat collaborative program in 2014, while the Savolainen, et al. estimates are based on a random sample of 20 headboats. The headboats that participated in the collaborative program may be economic highliners, in which case Abbott and Willard's estimates would overestimate average annual gross revenue for Gulf headboats. D. Carter, SEFSC, pers. comm. 2018 recently estimated that average annual gross revenue for Gulf headboats was approximately $514,000 (2024$) in 2017. This estimate is likely the best current estimate of annual gross revenue for Gulf headboats, as it is based on a relatively large sample of 63 boats, or more than 90% of the active fleet, and is more recent.

However, gross revenues overstate the annual economic value and profits generated by for-hire vessels. Economic value for for-hire vessels can be measured by PS per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of revenue, costs, and trip net revenue (TNR) for trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). After accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 42% of revenue for Gulf charter vessels and 54% of revenue for southeast headboats,[28] or $938 and $2,179 (2024$), respectively (Table 3.3.2.5). When TNR is divided by the number of anglers on a trip, it represents cash flow per angler (CFpA), which approximates PS per angler trip. The estimated CFpA value for an average Gulf charter angler trip is $171 (2024$) and the estimated CFpA value for an average Gulf headboat angler trip is $77 (2024$; Souza and Liese 2019). Estimates of CFpA for individual reef fish species or species group target trips, in particular, are not available.

[28] Southeast headboats include headboats operating either the Gulf or South Atlantic. Souza and Liese (2019) state "the sample size available for headboats is limited (n=30) and, hence, the results are presented at an overall SE aggregation."

Table 3.3.2.5. Trip economics for offshore trips by Gulf charter vessels and southeast headboats in 2017 (2024$).

	Gulf Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	27%	19%
Labor Costs (% of revenue)	27%	22%
Net Revenue per trip including Labor costs (% of revenue)	42%	54%
Net Revenue per Trip	$938	$2,179
Average # of Anglers per Trip	5.5	28.2
Trip Net Cash Flow per Angler Trip	$171	$77

Source: Souza and Liese (2019).

Business Activity

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. Note, in the absence of the opportunity to fish, the income would presumably 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 business activity (economic impacts) associated with recreational angling for DWG complex species were calculated using average trip-level impact coefficients derived from the 2022 Fisheries Economics of the U.S. report (NMFS 2024a) and underlying data provided by the National Oceanic and Atmospheric Administration Office of Science and Technology. Economic impact estimates in 2022 dollars were adjusted to 2024 dollars using the annual, not seasonally adjusted, gross domestic product (GDP) implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Business activity (economic impacts) for the recreational sector is characterized in the form of jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), output impacts (gross business sales), and value-added impacts (contribution to the GDP in a state or region). Estimates of the average annual economic impacts (2019–2023) resulting from DWG complex charter, private vessel, and shore target trips are provided in Table 3.3.2.6. These impacts should not be added together because this would result in double counting. The average impact coefficients, or multipliers, used in the model are invariant to the "type" of effort (e.g., target or catch) and can therefore be directly used to measure the impact of other effort measures

such as DWG complex catch trips. To calculate the multipliers from Table 3.3.2.6, simply divide the desired impact measure (value-added impact, sales impact, income impact, or employment) associated with a given state and mode by the number of target trips for that state and mode.

The estimates provided in Table 3.3.2.6 only apply at the state-level. Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity, because state-level impact multipliers do not account for interstate and interregional trading. It is also important to note that these economic impacts estimates are based on trip expenditures only and do not account for durable expenditures. Durable expenditures cannot be reasonably apportioned to individual species or species groups. As such, the estimates provided in Table 3.3.2.6 may be considered a lower bound on the economic activity associated with those trips that targeted DWG complex species.

Estimates of the business activity associated with headboat effort are not available. Headboat vessels are not covered by MRIP in the southeast, so, in addition to the absence of estimates of target effort, estimation of the appropriate business activity coefficients for headboat effort has not been conducted.

Table 3.3.2.6. Estimated average annual economic impacts (2019 - 2023) from Gulf charter and private vessel DWG complex target trips, by state*, using state-level multipliers. All monetary estimates are in 2024 dollars in thousands.

	FL	AL
	Charter Mode	
Target Trips	41	19
Value Added Impacts	$28	$8
Sales Impacts	$44	$13
Income Impacts	$19	$6
Employment (Jobs)	0	0
	Private/Rental Mode	
Target Trips	1,352	1,023
Value Added Impacts	$48	$40
Sales Impacts	$81	$86
Income Impacts	$24	$17
Employment (Jobs)	0	0
	All Modes	
Target Trips	1,393	1,042
Value Added Impacts	$76	$48
Sales Impacts	$124	$99
Income Impacts	$42	$23
Employment (Jobs)	1	1

*There was no recorded target effort for DWG species in Texas or Mississippi and Louisiana data are currently unavailable.

National-level multipliers must be used to account for interstate and interregional trading when calculating a national total of economic impacts. Between 2019 and 2023, and using national-level multipliers, DWG complex target effort generated employment, income, value-added, and output (sales) impacts of 2 jobs, $128,000, $244,000, and $473,000 per year, respectively, on average.

3.4 Description of the Social Environment

This amendment affects the commercial and recreational management of species managed within the DWG complex in the Gulf. These species are snowy grouper, speckled hind, warsaw grouper, and yellowedge grouper. The following description presents baseline information on fishing participants and fishing communities. This description includes the current status of the fishery in order to present the communities that are expected to be primarily affected by the actions in this amendment because they are the most engaged in and/or reliant on the fishery and is used to inform the social effects. Community level data are presented whenever possible in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), which requires the consideration

of the importance of fishery resources to human communities when changes to fishing regulations are considered.

The following description includes permits related to the commercial and recreational reef fish fishing by state and in order to provide a geographic distribution of fishing involvement. Top communities based on the number of permits are presented. Commercial and recreational landings by state are included to provide information on the geographic distribution of fishing involvement. Descriptions of DWG-IFQ accounts with shares, DWG-IFQ accounts with allocation but without shares, and DWG-IFQ species dealers are included at the state and community level. The top communities in the Gulf by commercial landings are identified, the contribution of DWG species compared to the total landings for the community are depicted, and their commercial engagement and reliance are described. Descriptions of the top communities based on recreational engagement are also included. Lastly, social vulnerability data are presented for all top-ranking communities.

The most recent data available have been utilized in the following section; however, the year range or date presented may not match what is included elsewhere because some sources of data are not available at the community or state level.

3.4.1 Commercial Sector

Description of the IFQ Program

Commercial fishing for DWG is part of a multi-species grouper fishery with species commonly co-occurring and co-caught and is conducted through the Grouper-Tilefish (GT) IFQ program. The GT IFQ program includes five share categories including a DWG-IFQ share category for DWG species, which includes flexibility measures for scamp, a shallow-water grouper (SWG) species under the Other SWG-IFQ share category. SWG-IFQ includes flexibility measures for two DWG species, warsaw grouper and speckled hind. There is a high degree of overlap in participation between share categories within the GT IFQ program, with the majority of shareholders holding shares in three or more share categories since the start of the program (NMFS 2024b). There is also great overlap between vessels that land GT IFQ and those that land Red Snapper IFQ, a separate, but related IFQ program (94% of GT IFQ vessels landed Red Snapper IFQ in 2023, NMFS 2024b). Recently, the commercial quota has been reduced for multiple GT IFQ share categories including gag (GMFMC 2023) and SWG (GMFMC 2025); whereas the quota for red grouper was increased through an emergency action.

Participants in the IFQ program include shareholders (those who hold shares and receive annual allocation from those shares), allocation only holders (those who purchase or use annual allocation from other shareholders; however, these accounts may be related to shareholder accounts), vessel owners, permit owners, hired captains, crew, and fish dealers. Shareholders can include such categories of participants as commercial and for-hire fishermen, fish dealers, brokers (those who own shares and sell their allocation to others), and restaurant owners. Shareholders can be involved in the program in multiple ways and through a variety of business arrangements; for example, a shareholder can include an individual or company that owns a

vessel and permit, owns shares, fishes their allocation, and purchases additional allocation from others. Another example of a shareholder is a business that owns a vessel, owns a permit, owns shares, and acts as a fish dealer. Some fish dealers acquire shares and allocation for use by the vessels that supply fish for their fish house, with in some cases, a fleet of vessels reliant on the allocation that they procure. Dealers must have an IFQ account and an IFQ dealer endorsement in order to receive landings of IFQ species.

Interactions between participants within the IFQ program are critical to the way that fishermen operate within the system and comply with the rules and regulations. Anecdotally, it has been reported that fishermen frequently rely on their social networks, the people they know, to find shares and allocation for sale. In particular, it has been described that fishermen frequently rely on their fish dealers for allocation. Some fishermen also rely on their dealer or more technically inclined connections to help them to fill out paperwork required for permit applications or IFQ requirements.

DWG allocation is distributed annually to shareholders. The amount of allocation received by each shareholder is based on a proportion of the quota for the year, with the initial issuance of share amounts based on past participation. Shares and allocation can be bought and sold, and the number of shares held by particular shareholders and number of people holding shares has changed over the years, with a steady reduction in the number of accounts with DWG-IFQ shares over time (472 shareholders at the beginning of the program in 2010 compared to 305 in 2023, NMFS 2024b). The greatest proportion of DWG-IFQ shares are held by large shareholders (61% of shares in 2023, large is categorized as holding greater than or equal to 1.5% of shares), followed by medium shareholders (37%, medium is categorized as holding between 0.05-1.4999% of shares), and small (2%, small is categorized as holding less than 0.05% of shares, NMFS 2024b). Conversely, the greatest number of DWG-IFQ shareholders are small (61% of shareholders in 2023), followed by medium shareholders (34%), and large shareholders (4%). New shareholders are able to participate through the purchase of shares from other shareholders and those without shares are able to participate and land DWG species through the purchase or use of another shareholder's allocation through a transfer.

Annual allocation can be transferred resulting from the purchase of allocation (commonly referred to as leasing quota) or through other arrangements, for example, such as the transfer of allocation to a related account (such as another account held by the same shareholder) or for example, a transfer to a vessel that is delivering fish to the shareholder's fish house. A sizable proportion of participants (33% of DWG allocation holders in 2023, NMFS 2024b) acquire DWG allocation via transfer and do not hold DWG shares; however, some may receive allocation from a related account that holds shares. Allocation is transferred more than the total amount of the quota and may often be transferred multiple times before being used to account for landings. For example, in 2023, 170% of the DWG quota was transferred through 881 allocation transfers (NMFS 2024b).

Permits

Gulf reef fish permits are limited access, but transferrable. The name listed on the permit must match the name listed on the IFQ account in order to harvest IFQ species. Gulf reef fish permits

are issued to entities, such as individuals and/or businesses in Florida (81.4% of Gulf reef fish vessels), Texas (7.8%), Alabama (4.5%), Louisiana (3.8%), and Mississippi (0.9%) (SERO permit office, July 8, 2021). Residents of other states (Arkansas, Georgia, Illinois, Maryland, Missouri, North Carolina, New York, Oklahoma, and South Carolina) also hold commercial reef fish permits, but these states represent a smaller percentage of the total number of issued permits.

Gulf reef fish permits are held by those with mailing addresses in 232 communities (SERO permit office, July 8, 2021). Communities with the most commercial reef fish permits are located in Florida and Texas (Table 3.4.1.1). The communities with the most reef fish permits are Panama City, Florida (9.1% of reef fish permits), Key West, Florida (4.8%), and St. Petersburg, Florida (3.3%).

Table 3.4.1.1. Top communities by number of Gulf reef fish permits.

State	Community	Reef Fish Permits (RR)
FL	Panama City	82
FL	Key West	43
FL	St. Petersburg	30
FL	Largo	26
TX	Galveston	22
FL	Destin	22
FL	Cortez	21
FL	Pensacola	21
FL	Seminole	20
FL	Clearwater	16
FL	Tampa	16
FL	Lynn Haven	13
FL	Naples	13
FL	Steinhatchee	13
FL	Apalachicola	11
FL	Tarpon Springs	11

Source: SERO permit office, July 8, 2021.

Landings

The majority of the commercial catch of DWG species is landed along the west coast of Florida (average of 66.3% from 2016-2020), followed by Texas (21.8%), Louisiana (11.8%), and Alabama and Mississippi (0.1%, NMFS SERO IFQ database accessed 4/2/25).

IFQ Accounts

To land IFQ-managed species, such as DWG, fishermen need a permitted vessel with an activated VMS unit, and sufficient IFQ allocation in the vessel's account to land the fish. Like permits, some accounts are held in the name of an individual, or more than one individual, while others form business entities and open accounts in the name of the business. This makes it more difficult to talk about the social environment as there may be multiple individuals behind the account, and they may not reside in the same area. In the following analysis, accounts are described at the state and community level based on the mailing address of the self-designated primary entity (e.g., individual, business, or primary entity listed on the permit or IFQ application when held by more than one entity).

An IFQ account, also called shareholder account, is required to hold shares and allocation. The number of accounts is used here as a proxy to represent the number of participants and may represent more than one entity.

Shareholders

As of July 8, 2021, a total of 331 IFQ accounts held shares of DWG-IFQ (IFQ database; includes active and suspended accounts). The majority of accounts with DWG-IFQ shares have a mailing address in Florida (74.9% of accounts with DWG-IFQ shares, Table 3.4.1.2), followed by Texas (10.3%), Louisiana (5.4%), Alabama (4.8%), and Mississippi (1.2%). Accounts with mailing addresses in other states (Arkansas, Georgia, North Carolina, New York, Oregon, South Carolina, Tennessee, and Utah) also hold DWG-IFQ shares, but these states represent a smaller percentage of the total number of accounts with shares.

The greatest proportion of DWG-IFQ shares are held in accounts with mailing addresses in Florida, followed by Texas (Table 3.4.1.2). Accounts in Alabama, Louisiana, Mississippi, and other states also hold DWG-IFQ shares, but these states represent a smaller percentage of shares.

Table 3.4.1.2. Number of IFQ accounts with DWG shares by state, including the percentage of shares by state by share category.

State	Accounts	DWG Shares (%)
AL	16	0.903
FL	248	51.083
LA	18	5.803
MS	4	0.350
TX	34	32.663
Other	11	9.065
Total	331	99.867

Source: NMFS SERO IFQ database accessed 7/8/21.
Note: Includes active and suspended accounts.

Accounts with DWG-IFQ shares are held by people with mailing addresses in a total of 142 communities (IFQ database accessed 7/8/21). Communities with the most accounts with DWG-IFQ shares are located in Florida and Texas (Table 3.4.1.3). The community with the most accounts with DWG-IFQ shares is Panama City, Florida (9.7% of accounts with shares), followed by Cortez and Destin, Florida (each with 3.6%).

Table 3.4.1.3. Top communities by number of IFQ accounts with DWG shares, including the percentage of shares by community.

State	Community	Accounts	DWG Shares (%)
FL	Panama City	32	12.066
FL	Cortez	12	4.083
FL	Destin	12	2.589
FL	Key West	10	0.172
FL	Largo	10	2.216
FL	Pensacola	10	1.260
FL	St. Petersburg	10	2.098
TX	Galveston	9	7.551
FL	Seminole	8	2.501
FL	Tarpon Springs	8	1.054
FL	Tampa	6	0.172
FL	Apalachicola	5	2.258
FL	Fort Walton Beach	5	0.437
FL	Holiday	5	0.045
TX	Houston	5	19.783

Source: NMFS SERO IFQ database accessed 7/8/21.

The largest or maximum percent of DWG-IFQ shares held in a community is 19.783% in Houston, Texas (IFQ database accessed 7/8/21). The percentage of shares by community varies widely and a large number of accounts with shares may not necessarily correlate to a large percentage of shares in a particular category (Table 3.4.1.3). Some communities with a relatively smaller number of accounts may have a larger percentage of shares.

Allocation Only Holders

In 2020, a total of 145 IFQ accounts out of 463 IFQ accounts (31%) held DWG-IFQ allocation without DWG-IFQ shares (IFQ database accessed 2/25/22). However, some of these accounts may be related to accounts with DWG shares. The majority of accounts with DWG-IFQ allocation, but without DWG-IFQ shares have mailing addresses in Florida (74.5% of accounts with DWG allocation, but without DWG shares, Table 3.4.1.4), followed by Texas (11%), Louisiana (6.9%), and Alabama and Mississippi (4.8%). Account holders with DWG allocation, but without DWG shares also have mailing addresses in other states (North Carolina, Ohio, and

South Carolina), but these states represent a smaller percentage of the total number of accounts with DWG allocation, but without DWG shares.

Table 3.4.1.4. Number of IFQ accounts with DWG allocation, but without DWG shares by state, 2020.

State	Accounts
AL/MS	7
FL	108
LA	10
TX	16
Other	4
Total	145

Source: NMFS SERO IFQ database accessed 2/25/22.

IFQ accounts with DWG-IFQ allocation, but without DWG-IFQ shares, have mailing addresses in a total of 71 communities (IFQ database accessed 2/25/22). Communities with the most accounts with allocation, but without shares are located in Florida and Texas (Table 3.4.1.5). The community with the most accounts with allocation, but without shares is Panama City, Florida (8.3% of accounts with allocation, but without shares, Table 3.4.1.5), followed by Galveston, Texas (7.6%) and Madeira Beach, Florida (5.5%).

Table 3.4.1.5. Top communities by number of IFQ accounts with DWG allocation, but without DWG shares, 2020.

State	Community	Accounts
FL	Panama City	12
TX	Galveston	11
FL	Madeira Beach	8
FL	Largo	6
FL	St. Petersburg	6
FL	Pensacola	5
FL	Destin	4
FL	Indian Rocks Beach	4
FL	Indian Shores	4
FL	Lecanto	4

Source: NMFS SERO IFQ database accessed 2/25/22.

Dealers

The majority of dealer facilities with DWG-IFQ species landings are located in Florida (average of 69.1% of Gulf DWG IFQ species dealer facilities for 2016 - 2020, Table 3.4.1.6), followed by Louisiana and Texas (each with 11%), and Alabama and Mississippi (8.9%).

Table 3.4.1.6. Number of Gulf DWG IFQ species dealer facilities by state for 2016 - 2020.

Year	AL/MS	FL	LA	TX
2016	7	44	7	7
2017	7	48	9	10
2018	5	48	9	9
2019	7	53	6	6
2020	4	40	6	5

Source: NMFS SERO IFQ database accessed 4/2/25.

Gulf DWG-IFQ species dealers are located in a total 68 communities (IFQ database accessed 4/2/25, includes dealers with landings of DWG species from 2016 - 2020). Communities with the most Gulf DWG-IFQ species dealer facilities are located in Florida, Alabama, Louisiana, and Texas (Table 3.4.1.7). The community with the most Gulf DWG-IFQ species dealer facilities is Madeira Beach, Florida (7% of Gulf DWG-IFQ dealer facilities, Table 3.4.1.7), followed by Key West, Florida and Panama City, Florida (each with 4.9%).

Table 3.4.1.7. Top communities by number of dealer facilities with DWG-IFQ species landings during 2016 - 2020.

State	Community	*Dealer Facilities
FL	Madeira Beach	10
FL	Key West	7
FL	Panama City	7
AL	Bayou La Batre	5
FL	Destin	5
FL	Fort Myers Beach	5
AL	Bon Secour	4
FL	Pensacola	4
FL	Tarpon Springs	4
LA	Golden Meadow	4
TX	Galveston	4

Source: NMFS SERO IFQ database accessed 4/2/25.
*Multiple dealers can use the same facility and a dealer can operate at multiple facilities.

Regional Quotient

Regional Quotient (RQ) is the proportion of DWG-IFQ species landed within a community out of the total amount of DWG-IFQ species landed within the southeast region. It is an indicator of the percent contribution in pounds or value of DWG-IFQ species landed within that community relative to the regional fishery. The RQ is reported individually only for the top 10 communities by total landings for the years of 2016 through 2020. All other communities that landed DWG-IFQ species are grouped as "Other." Figure 3.4.1.1 shows the RQ in percentage of pounds from 2016 to 2020. The dominant communities for DWG-IFQ species pounds landed include the communities of Madeira Beach, Florida; Galveston, Texas; Panama City, Florida; and Cortez,

Florida (Figure 3.4.1.1). The top community of Madeira Beach, Florida is frequently referred to as the "Grouper Capital of the World," and includes an average of 23.4% of landings of DWG-IFQ species over the time series. Several of the top 10 communities are located in Pinellas County (Madeira Beach, Redington Shores, and Tarpon Springs) and are within close proximity to each other. In addition, although Cortez, Florida (ranked fourth) is located in an adjacent county, Manatee County, it is also located within close proximity to Pinellas County. Two of the top three communities are located in the Florida Panhandle (Panama City and Apalachicola).

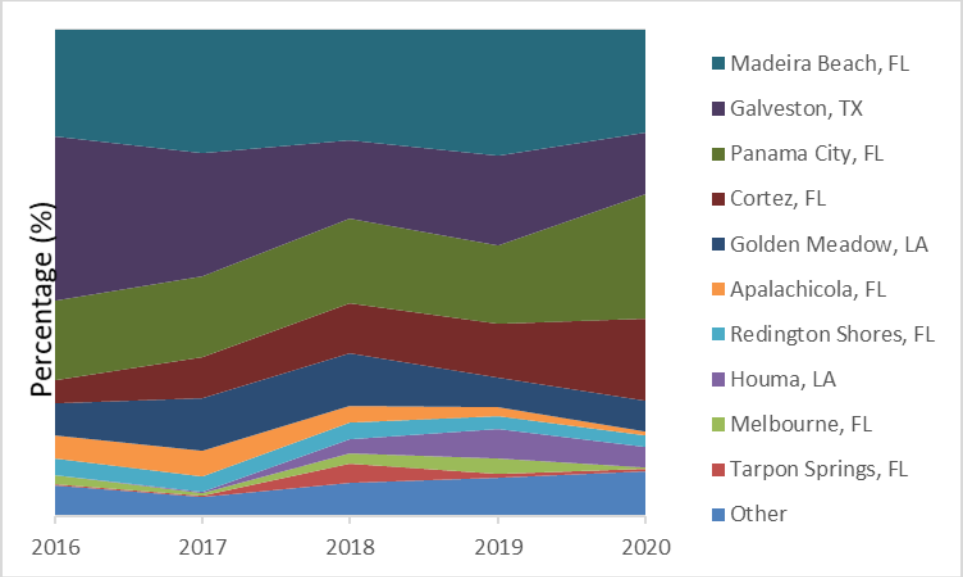

Figure 3.4.1.1. Regional Quotient (pounds) for top communities by landings of Gulf DWG-IFQ Program species from 2016 through 2020.
Source: IFQ database accessed 4/2/25.

Local Quotient

The community Local Quotient (LQ) is the percentage of DWG-IFQ species landed within that community out of the total of all species landed within that community. It is an indicator of the contribution of the value of DWG-IFQ species to the overall landings in a community. Figure 3.4.1.2 shows the LQ in percentage of value from 2019 to 2023 for the top communities by landings of Gulf DWG-IFQ species as depicted in Figure 3.4.1.1. The LQ for all included communities fluctuated considerably throughout the time series. The community of Panama City, Florida includes a comparatively high DWG-IFQ LQ for all years with greater than or equal to 13% of value in landings and ranging up to a high of 21% of value. The community of Madeira Beach, Florida also includes a comparatively high LQ of greater than or equal to 10% of value in landings per year and ranging up to a high of 18%. Cortez, Redington Shores, and Melbourne, Florida also include a comparatively high LQ for some years.

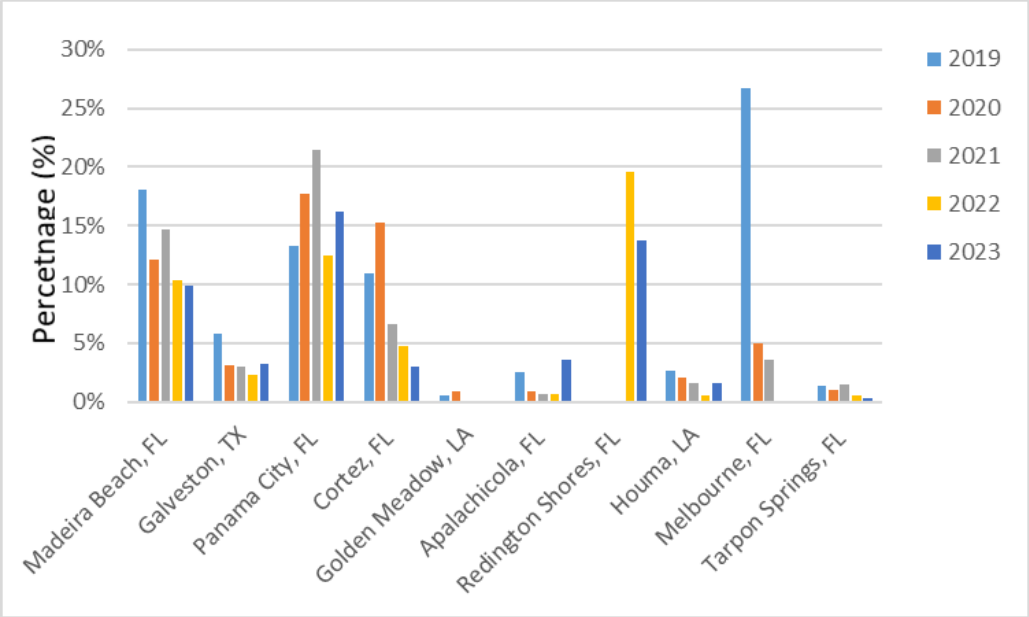

Figure 3.4.1.2. Local Quotient (value) for top communities by landings of Gulf DWG-IFQ Program species for 2019 to 2023.
Source: SERO, Community ALS.

Engagement and Reliance

In addition to examining the RQs and LQs to understand how Gulf communities are engaged and reliant on fishing, indices were created using secondary data from permit and landings information for the commercial sector (Jepson and Colburn 2013, Jacob et al. 2013). Fishing engagement is primarily based on the absolute numbers of permits, landings, and value. The analysis used the number of vessels designated commercial by homeport and owner address, value of landings, and total number of commercial permits for each community. Fishing reliance includes the same variables as fishing engagement divided by population to give an indication of the per capita influence of this activity.

Taking the communities with the highest RQs, factor scores of both engagement and reliance for commercial fishing were plotted. Two thresholds of one and one-half standard deviation above the mean are plotted onto the graphs to help determine a threshold for significance. The factor scores are standardized; therefore, a score above one is also above one standard deviation. A score above one-half standard deviation is considered engaged or reliant, with anything above one standard deviation to be very engaged or reliant.

Figure 3.4.1.2 is an overall measure of a community's commercial fishing engagement and reliance and includes the communities with the strongest relationship to the commercial sector for DWG species as depicted in Figure 3.4.1.1. Most communities in Figure 3.4.1.3 would be considered to be highly engaged in commercial fishing, as many are at or above one standard deviation of the mean factor score. Redington Shores, Florida and Melbourne, Florida show the least amount of engagement in commercial fishing overall. Madeira Beach, Florida; Cortez,

Florida; Golden Meadow, Louisiana; and Apalachicola, Florida demonstrate a moderate to high level of commercial reliance.

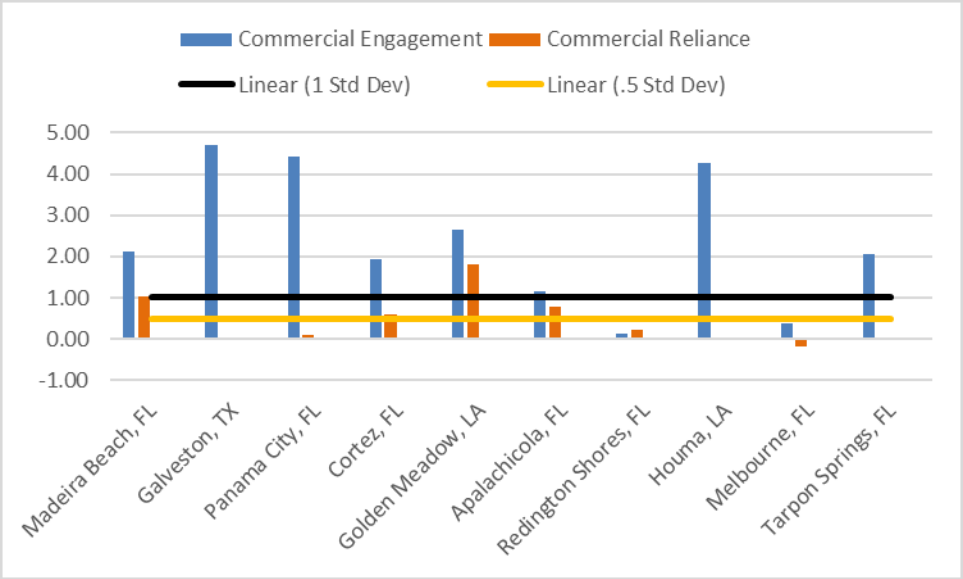

Figure 3.4.1.3. Commercial fishing engagement and reliance for top DWG species communities.
Source: SERO Community Social Vulnerability Indicators Database 2021.

3.4.2 Recreational Sector

Permits

Charter/headboat for reef fish permits are issued to entities, such as individuals and businesses in Florida (60% of charter/headboat for reef fish vessels), Texas (15.7%), Alabama (10.6%), Louisiana (7.4%), and Mississippi (2.6%, SERO permit office, July 8, 2021). Residents of other states (Arkansas, Arizona, California, Colorado, Georgia, Illinois, Michigan, Missouri, Montana, North Carolina, New Jersey, New York, Ohio, Oklahoma, Tennessee, Virginia, and Wisconsin) also hold charter/headboat permits, but these states represent a smaller percentage of the total number of issued permits.

Charter/headboat for reef fish permits are held by those with mailing addresses in 355 communities (SERO permit office, July 8, 2021). Communities with the most charter/headboat for reef fish permits are located in Florida, Alabama, and Texas (Table 3.4.2.1). The communities with the most charter/headboat permits are Panama City, Florida (4.6% of charter/headboat permits), Destin, Florida (4.4%), and Orange Beach, Alabama (4.1%).

Table 3.4.2.1. Top communities by number of Gulf charter/headboat for reef fish permits.

State	Community	Charter/Headboat for Reef Fish Permits (RCG)
FL	Panama City	65
FL	Destin	62
AL	Orange Beach	57
FL	Naples	45
FL	Key West	43
FL	Pensacola	30
FL	Sarasota	27
FL	St. Petersburg	23
TX	Galveston	21
FL	Panama City Beach	19
TX	Corpus Christi	19
FL	Cape Coral	18
FL	Clearwater	18
FL	Fort Myers	18
FL	Crystal River	16
FL	Tampa	16
FL	Gulf Breeze	14

Source: SERO permit office, July 8, 2021.

Landings

The majority of recreational DWG landings are from the waters adjacent to the west coast of Florida (average of 61.8% from 2019 - 2023), followed by Louisiana and Mississippi (21.4%), Alabama (14.5%), and Texas (2.4%, SEFSC Recreational MRFSS ACL Dataset and LA Creel).

Engagement and Reliance

Landings for the recreational sector based on fisheries survey data are not an accurate representation of the species caught at the community level, making it difficult to identify communities as dependent on recreational fishing for DWG. Because limited data are available concerning how communities are engaged and reliant on specific species in the recreational sector, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013, Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational vessels designated as "recreational" by homeport and owners address and the number of recreational fishing survey sites in a particular community. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted by community.

Figure 3.4.2.1 identifies the Gulf communities that are the top communities by engagement upon recreational fishing in general. Two thresholds of one and one-half standard deviation above the mean were plotted to help determine a threshold for significance. Communities are presented in ranked order by fishing engagement and all included communities demonstrate high levels of recreational engagement, although this is not specific to fishing for DWG. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the top list, suggesting a greater importance for recreational fishing in that area. The communities of Venice, Louisiana; Tavernier; Florida; Islamorada, Florida; Orange Beach, Alabama; Port Aransas, Texas; Destin, Florida; Key West, Florida; Marathon, Florida; and Crystal River, Florida demonstrate the highest reliance on recreational fishing. The communities of Naples and Fort Myers Beach, Florida demonstrate a moderate to high reliance.

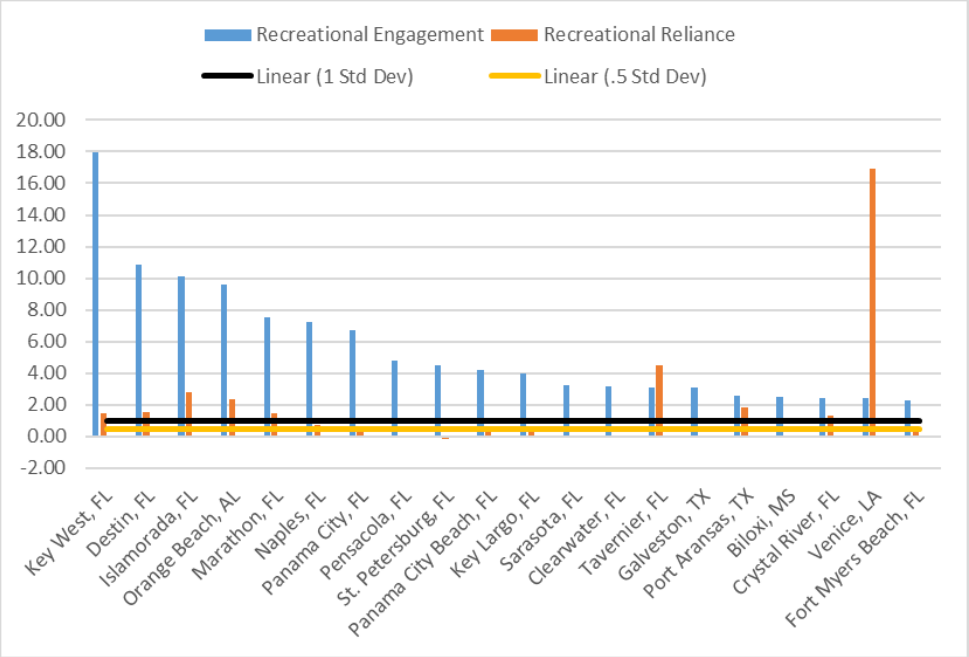

Figure 3.4.2.1. Recreational fishing engagement and reliance for top Gulf communities.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

3.4.3 Social Vulnerability

A suite of indices was created using census data to examine the social vulnerability of coastal communities. The three indices are poverty, population composition, and personal disruption. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability. Poverty includes poverty rates for different groups; population composition includes more single female-headed households, households with children under the age of five, minority populations, and those that speak English less than well; and personal disruption includes disruptions such as higher separation rates, higher crime rates, and unemployment. Increased rates in the indicators are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the

threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figures 3.4.3.1 and 3.4.3.2 provide social vulnerability rankings for place-based communities identified in Section 3.4 as important to commercial and recreational fishing for DWG specifically, fishing for reef fish, or marine fishing in general. Several communities exceed the threshold of one standard deviation above the mean for at least one of the indices (Bayou La Batre, Alabama; Holiday, Florida; Steinhatchee, Florida; Venice; Louisiana; and Houston, Texas). These communities would be the most likely to exhibit vulnerabilities to social or economic disruption resulting from regulatory change.

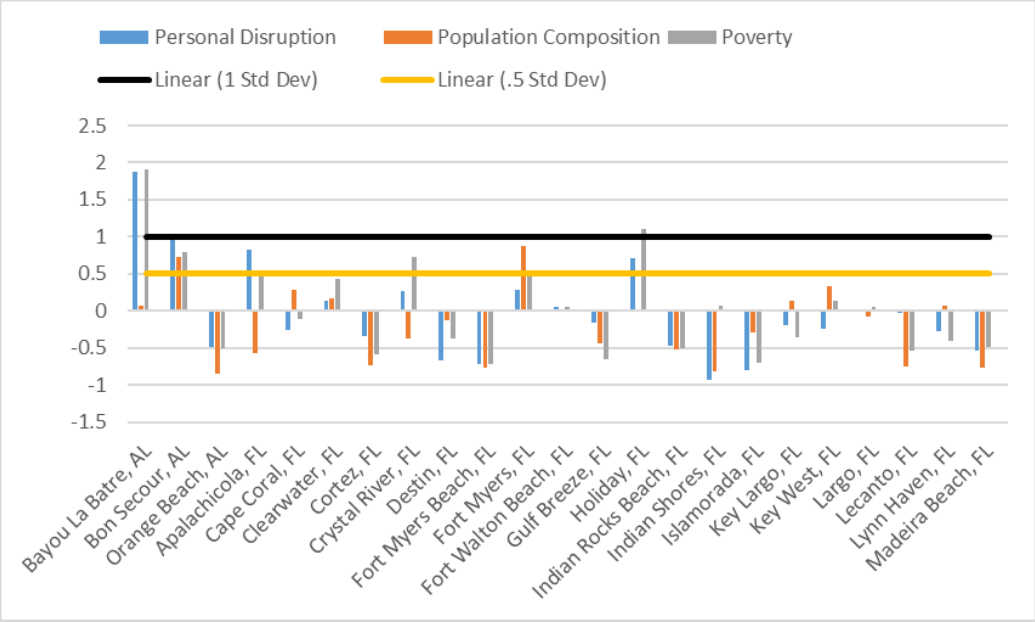

Figure 3.4.3.1. Social vulnerability indices for top commercial and recreational reef fish and DWG communities.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

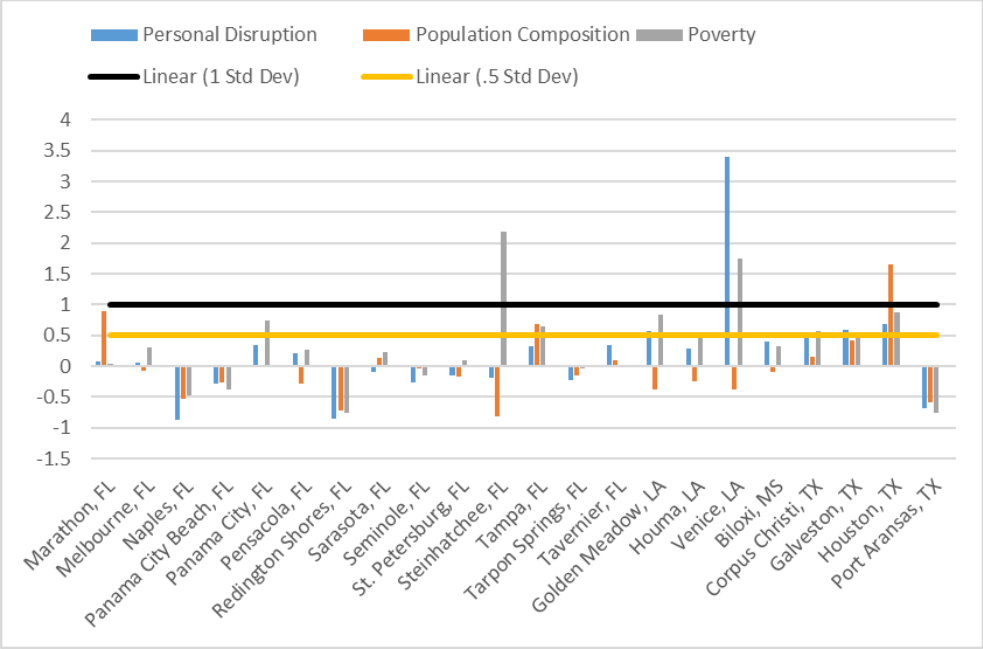

Figure 3.4.3.2. Social vulnerability indices for top commercial and recreational reef fish and DWG communities continued.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

The description of fishing activities presented here highlights which communities may be most involved in Gulf DWG fishing. It is expected that the impacts from the regulatory action in this amendment, whether positive or negative, will most likely affect those communities identified above.

3.5 Description of the Administrative Environment

3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1801 *et seq*.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ. The EEZ is defined as an area extending 200 nautical miles from the seaward boundary of each of the coastal states. The Magnuson-Stevens Act also claims authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making. Eight Regional Fishery Management Councils is vested with the Secretary of Commerce (Secretary) who reviews and implements fishery management plans prepared by eight regional fishery management councils that represent the expertise and interests of constituent states provide recommendations to the Secretary. Regional Councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for reviewing and approving Fishery Management Plans and amendments to those

plans and promulgating regulations to implement proposed plans and amendments. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for making recommendations on fishery resources in federal waters of the Gulf. These waters extend 200 nautical miles offshore from the seaward boundaries of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline extending 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles).

The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process.

3.5.2 State Fishery Management

The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five states exercises legislative and regulatory authority over their states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states' natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided on their respective web pages (Table 3.5.2.1).

Table 3.5.2.1. State marine resource agencies and web pages.

State Marine Resource Agency	Web Page
Alabama Marine Resources Division	http://www.outdooralabama.com/
Florida Fish and Wildlife Conservation Commission	http://myfwc.com/
Louisiana Department of Wildlife and Fisheries	http://www.wlf.louisiana.gov/
Mississippi Department of Marine Resources	http://www.dmr.ms.gov/
Texas Parks and Wildlife Department	http://tpwd.texas.gov/

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1: Modification of Deep-Water Grouper (DWG) Maximum Sustainable Yield (MSY) Proxy, Overfishing Limit (OFL), Acceptable Biological Catch (ABC), and Complex Annual Catch Limit (ACL)

4.1.1 Effects on the Physical Environment

The alternative to the status quo in this action establishes a new proxy for MSY for DWG, and by association, redefines the maximum fishing mortality threshold (MFMT), the minimum stock size threshold (MSST), and optimum yield (OY). It also reduces the DWG complex catch limits, consistent with the advice of the Council's SSC.

Effects from fishing on the physical environment are generally tied to fishing effort. The greater the fishing effort, the more gear interacts with the bottom. Different gear types have different levels of impact. Commercial and recreational DWG fishing uses vertical line gear (rod and reel, bandit gear for commercial vessels) most frequently, which can interact with and affect bottom habitat. Commercial longline fishing gear, which interacts with bottom habitat over the length of the deployed gear, may also capture DWG. Anchor damage is also associated with vertical line fishing vessels, particularly by the recreational sector where anglers may repeatedly visit well-marked fishing locations. Preferred fishing sites, like reefs, are targeted and revisited multiple times (Bohnsack 2000). Fouled fishing gear may entangle and harm deep-water coral habitats and may also contribute to algal growth on and adjacent to fouled gear (Bohnsack 2000). Barnette (2001) suggested that physical impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers). The cumulative effects of repeated anchoring could damage the hard bottom areas where reef fish fishing occurs, as well as repeated drops of weighted fishing rigs onto the reef. Recreational vessels that use vertical line gear are typically known to anchor more frequently over the reef sites.

Under **Alternative 1**, there would be no change to MSY proxy or catch limits, and therefore no effects on the physical environment. **Preferred Alternative 2** would define the F_{MSY} proxy for DWG as $F_{40\%SPR}$ and reduce the stock complex catch limits. A reduction in the catch limits could reduce fishing effort could and, therefore, impacts to the physical environment. However, because of the multi-species nature of the reef fish fishery the manner in which the fishery is prosecuted is not expected to change. Thus, modifying the MSY proxy and catch limits for DWG in **Preferred Alternative 2** is not expected to result in measurable effects to the physical environment compared to **Alternative 1**.

4.1.2 Effects on the Biological and Ecological Environment

Effects from fishery management actions as they relate to DWG have been discussed in detail in GMFMC (2011a) and are incorporated here by reference. Management actions that affect the

biological and ecological environments primarily relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from a population through fishing reduces the overall population size. Fishing gear types have different selectivity patterns, which refer to a fishing method's ability to target and capture a species by size (length) and age. Selectivity patterns also include discards, which are mostly composed of sublegal sized fish or fish caught during seasonal closures, and the mortality associated with releasing these fish.

Fishing can affect life history characteristics of reef fish, such as growth and maturation rates. Grouper reproduction may also be impacted by fishing. As an example, for another grouper species, Fitzhugh et al. (2006) reported the size at which 50% of female gag (*Mycteroperca microlepis*) are sexually mature, and the size at which 50% of females transition to males, was smaller in their studies compared to earlier years. In addition, for hermaphroditic species (like DWG species), fishing pressure has been suggested as influential to changes in sex ratios. Again, looking to gag, the proportion of males in the population decreased from historical levels of 17% (Hood and Schlieder 1992) to 2-10% in the 1990s (Coleman et al. 1996), to approximately 2% in 2020 (SEDAR 72 2022). A decline in the ratio of male to female grouper could be an ongoing source of concern depending on the reproductive strategy of a particular species. Furthermore, for species that aggregate, the species is particularly vulnerable to fishing because it is concentrated at specific locations. This problem is magnified because of the depth at which a grouper species is found. At the depths common to DWG fishing (typically greater than 300 feet), DWG species are extremely vulnerable to mortality from barotrauma when hooked at depth and then reeled to the surface.

Alternative 1 (No Action) would retain the current F_{MSY} proxy ($F_{30\%SPR}$) and current complex catch limits, which the Gulf Council's (Council) Scientific and Statistical Committee (SSC) found to be inconsistent with the best scientific information available. Further, **Alternative 1** would maintain the conditions under which yellowedge grouper are estimated to have been experiencing overfishing since 2021 (SEDAR 85 2023). **Preferred Alternative 2** would redefine the F_{MSY} proxy for DWG as $F_{40\%SPR}$, in keeping with the justifications provided by the SSC in February 2024 (see Chapter 1, Section 2.1, and Section 4.1.1 above). **Preferred Alternative** 2 would also reduce the DWG complex OFL, ABC, and ACL. Neither alternative is expected to have substantial impacts on the biological environment. The multi-species nature of the reef fish fishery is expected to be maintained, and therefore the manner in which the fishery is prosecuted is not expected to change.

Expected effects on discards and bycatch of co-occurring species

Bycatch does occur within the reef fish fishery. If fish are released due to catch limits, seasons, or other regulatory measures, these fish are considered bycatch. In general, reducing bycatch provides biological benefits to managed species as well as benefits to the reef fish fishery through less waste, higher yields, and, thus, less forgone yield. In some cases, actions are approved that can increase bycatch through regulatory discards such as increased minimum sizes and closed seasons. Under these circumstances, biological benefit to the managed species through the approved action is estimated to outweigh any increases in discards from the action. With regard to Action 1 of this Amendment, no significant changes in bycatch are expected

regardless of the alternative. See Appendix C for a complete analysis on bycatch impacts based on the alternatives considered in this action.

Expected effects to protected species

Bycatch of protected species can occur when targeting reef fish in the Gulf. Specifically, sea turtles have been observed to be incidentally captured by the bottom longline component of the Gulf reef fish fishery. These captures can result in injury or mortality of the animal (GMFMC, 2010). However, the most recent biological opinion (NMFS 2011a) for the Reef Fish FMP and re-initiation memos concluded that the operation of the fishery is not likely to jeopardize the continued existence of sea turtles or other species listed under the Endangered Species Act (ESA). This fishery is also not expected to adversely affect marine mammals. The primary gear types used by the commercial sector (longline and hook-and-line) were classified in the 2025 Marine Mammal Protection Act Proposed List of Fisheries as a Category III fishery (89 FR 77789; September 24, 2024) with regard to marine mammal species, indicating the gear has little effect on these populations.

This action would not significantly modify the way in which the reef fish fishery is prosecuted in terms of gear types, overall effort, seasons, or areas fished. Therefore, there are no additional impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see Section 3.2 for a more detailed description of ESA-listed species and critical habitat in the action area and see Appendix C for further analysis on bycatch of ESA-listed species). The predicted effects on ESA-listed species and designated critical habitats are applicable to all actions in this plan amendment.

4.1.3 Effects on the Economic Environment

Alternative 1 would maintain the current OFL, ABC, and complex ACL. No economic effects are expected from this alternative. **Preferred Alternative 2** would revise the OFL, ABC, and complex ACL. The complex ACL would be reduced by 549,974 lb gw with **Preferred Alternative 2**. However, to analyze the effects of this action, it is necessary to determine how much **Preferred Alternative 2** would reduce the fish available to the commercial and recreational sectors. To calculate this reduction, the analysis uses the current commercial sector allocation of 96.5% and the current undefined recreational sector allocation, understood to be the remaining 3.5%.

Commercial Sector

For the commercial sector, the comparison of effects is based on the resulting quota from **Preferred Alternative 2** (514,176 lb gw) relative to that of **Alternative 1** (1.024 mp gw), as well as to that of historical landings under **Alternative 1** (2019 – 2023 landings are 817,452 lb gw). This provides an upper and lower bound of the effects. Because commercial landings have generally been less than the current commercial quota, the upper bound of effects is based on the full use of the quota under **Alternative 1**, and the lower bound is based on the 5-year average of historical commercial landings (2018-2023, excluding 2020) of 746,230 lb gw. The historical commercial landings used for the lower bound includes landings of scamp, which are other

shallow-water grouper (Other SWG) species landed using DWG quota as part of the DWG/SWG flexibility measures established in Amendment 29 to the Reef Fish FMP (GMFMC 2009). From 2021-2024, landings of scamp under DWG quota averaged 992 lb gw, with a standard deviation of 595 lb gw (SERO Catch Share Database, accessed August 2025).

To calculate expected changes in commercial consumer surplus (CS), own-price flexibility[29] for the Gulf DWG commercial sector would be required to derive the expected average price change. Keithly and Tabarestani (2018) estimated an uncompensated own-price flexibility for "GOM Other Grouper," inclusive of DWG, of -0.396. If own-price flexibility is unavailable, price is assumed constant with changes in the commercial quota, and if the expected average price change is zero, then multiplying that by the change in expected harvest by the commercial sector under the proposed quota to arrive at the expected change in commercial CS for DWG would result in a value of zero. However, for DWG, the expected change in commercial CS can be derived using the own-price flexibility for "GOM Other Grouper." The upper and lower bounds of the expected changes in commercial CS are displayed in Table 4.1.3.1, as are the expected average price changes, which are based on the calculated percent change in price multiplied by the average ex-vessel price from 2019 - 2023.

Table 4.1.3.1. Upper and lower bounds of expected change in the commercial sector's consumer surplus, relative to **Alternative 1**. Values are in 2024$.

Alternative	Upper Bound of Expected Change in Landings by Commercial Sector (lb gw)	Upper Bound of Expected Average Price Change ($/lb)	Upper Bound of Expected Change in CS (2024$)
Preferred Alt 2	-509,824	$1.31	-$1,009,871
Alternative	**Lower Bound of Expected Change in Landings by Commercial Sector (lb gw)**	**Lower Bound of Expected Average Price Change ($/lb)**	**Lower Bound of Expected Change in CS (2024$)**
Preferred Alt 2	-232,054	$0.82	-$516,851

To determine the upper bound of the respective expected change in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quota from **Preferred Alternative 2** is multiplied by the sum of the upper bound of the expected average

[29] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

price change from Table 4.1.3.1 and the average ex-vessel price per lb gw of $6.66 for DWG from 2019-2023 (2024$). From that, value is then subtracted the average ex-vessel price per lb gw multiplied by **Alternative 1's** quota.

To determine the lower bound of the respective expected changes in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quota from **Preferred Alternative 2** is multiplied by the sum of the lower bound of the expected average price change from Table 4.1.3.1 and the average ex-vessel price per lb gw of $6.66 for DWG from 2019-2023 (2024$). From that, value is then subtracted the average ex-vessel price per lb gw of $6.66 multiplied by the average commercial landings from 2018-2023, excluding 2020, which are 746,230 lb gw. The upper and lower bounds of the expected change in revenue are displayed in Table 4.1.3.2.

Table 4.1.3.2. Upper and lower bounds of the expected change in the commercial sector revenue, relative to **Alternative 1**. Values are in 2024$.

Alternative	Upper Bound in Expected Change in Comm Revenue	Lower Bound in Expected Change in Comm Revenue
Preferred Alt 2	-$2,720,275	-$1,123,784

The commercial producer surplus (PS) for vessels that harvested DWG complex species in the Gulf is estimated as 53.7% of the ex-vessel value (section 3.3.1). The upper and lower bounds of the expected change in commercial PS are shown in Table 4.1.3.3.

Table 4.1.3.3. Upper and lower bounds in expected change in the commercial sector PS relative to **Alternative 1**. Values are in 2024$.

	Upper Bound in Expected Change in Comm PS	Lower Bound in Expected Change in Comm PS
Preferred Alt 2	-$1,460,788	-$603,472

The upper and lower bounds of the total expected changes in net economic benefits for the commercial sector from **Preferred Alternative 2** relative to **Alternative 1** are calculated by adding the upper and lower bounds of the expected change in commercial CS from Table 4.1.3.1 to the upper and lower bounds of the expected change in commercial PS from Table 4.1.3.3. The values are displayed in Table 4.1.3.4.

Table 4.1.3.4. Upper and lower bounds in total expected change in net economic benefits for the commercial sector relative to **Alternative 1**. Values are in 2024$.

Alternative	Upper Bound in Total Expected Change in Net Economic Benefits to the Commercial Sector	Lower Bound in Total Expected Change in Net Economic Benefits to the Commercial Sector
Preferred Alt 2	-$2,470,658	-$1,120,323

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a per fish CS estimate. The most recent proxy for a CS estimate for a DWG species is the estimated value of the CS for a one fish change in grouper harvest, derived from keeping a second grouper on an angler trip. A value of $131 (Carter and Liese 2012; values updated to 2024$) reflects recreational willingness-to-pay (WTP) for one additional grouper harvest. This might overestimate the WTP of a DWG fish for Gulf recreational fishermen as a whole, if Gulf recreational fishermen are retaining more than one DWG fish per trip, since WTP decreases as additional fish are retained.

Unlike the commercial sector analysis, which uses two methods to calculate potential effects—the change in allowable harvest (upper bound) and the difference between historical landings and proposed allowable harvest (lower bound)—only the latter method is used for the recreational sector. The change in allowable harvest for the recreational sector cannot be calculated because the current undefined recreational harvest limit is based in Marine Recreational Fisheries Statistics Survey (MRFSS) data, and the proposed undefined recreational harvest limit is based on Marine Recreational Information Program - Fishing Effort Survey (MRIP-FES) data. To determine the effects from **Preferred Alternative 2** as a result in the difference between historical landings in MRIP-FES and proposed allowable harvest in MRIP-FES, the expected change in the number of fish harvested is calculated by dividing the difference between the recreational sector's allowable harvest and the average landings for the recreational sector from 2018-2023, excluding 2020, by 9.79 lb gw, which is the weighted average weight of a recreational landed DWG fish in the Gulf from the 2020 to 2024 fishing years.[30] Of note, the recreational sector's average landings from 2018-2023, excluding 2020, exceed by almost 70% the undefined recreational sector's ACL, which is considered to be the 3.5% of the complex ACL that is not allocated to the commercial sector; therefore, the economic effects estimated resulting from **Preferred Alternative 2** will be an overestimate. Multiplying the expected change in the number of fish expected to be landed by the recreational sector by the estimated value of the CS provides the expected change in CS for the recreational sector, as seen in Table 4.1.3.5.

Table 4.1.3.5. Expected change in the recreational sector's CS, relative to **Alternative 1**. CS values are in 2024$.

Alternative	Expected Change in Rec Sector Landings, Expressed as Number of Fish	Expected Change in Rec Sector CS
Preferred Alt 2	-4,696	-$615,126

[30] Landings were reported for speckled hind, yellowedge grouper, warsaw grouper, and snowy grouper. The percentage each species represented for the overall DWG recreational landings was averaged over 2018-2023, excluding 2020, and multiplied by the average recreationally landed weight of that species over 2020-2024 (M. Larkin, SERO pers. comm. 2025), and then summed to get a representative weight for a recreationally landed DWG fish.

The PS of the for-hire component of the recreational sector, being comprised of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught. Therefore, an assumption that no headboat trips would be lost due to a change in the recreational sector's allowable harvest would be reasonable. However, charter vessel trips that are targeting DWG may be cancelled by anglers and are the focus of the recreational sector PS analysis. Table 3.3.2.1 shows that an average of 60 target trips by charter mode for DWG in the Gulf were made from 2019-2023, which accounts for roughly 2.46% of all recreational target trips for DWG in the Gulf from 2019 - 2023. In contrast, an average of 6,244 catch trips by charter mode for DWG in the Gulf were made from 2019 - 2023. This suggests that DWG fish are incidentally harvested species. Therefore, a change in demand for for-hire trips would not be expected. While it is possible that some trip cancellations might occur, the effects would likely be minimal.

The negative effects to the recreational sector are contingent on the sector's landings being constrained to its allowable harvest. A management constraint, in the form of a modification to the recreational sector accountability measure, is considered in Action 3. Should the No Action alternative in Action 3 be selected as the preferred alternative, the negative effects to the recreational sector discussed in this section would either not occur or be diminished.

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors can be calculated for the effects from the difference between historical landings and proposed allowable harvest and is displayed in Table 4.1.3.6.

Table 4.1.3.6. Total expected change in net economic benefits for the both the recreational and commercial sectors relative to **Alternative 1**. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits Using Difference Between Historical Landings and Proposed Allowable Harvest
Preferred Alt 2	-$1,735,449

4.1.4 Effects on the Social Environment

The proposed changes to DWG management are expected to result in a range of social impacts across commercial and recreational sectors. These impacts would depend on the scale of reductions to allowable catch, how access is distributed between sectors, and how effectively accountability measures (AM) are implemented and perceived.

Action 1 considers revisions to the MSY proxy and catch limits for the DWG complex. **Alternative 1** (No Action) would retain the current MSY proxy and catch limits, which were based on earlier assessments and recreational data from the discontinued MRFSS. This alternative is not consistent with best scientific information available and is inconsistent with the

need to end overfishing for yellowedge grouper in the DWG complex. However, from a social perspective, **Alternative 1** would preserve existing access levels and support business planning based on known conditions. Continued overharvest of yellowedge grouper could impact the sustainability of the DWG fishery and reduce the long-term social benefits provided by this resource.

Preferred Alternative 2 would implement updated catch limits using MRIP-FES data and new stock assessment results. **Preferred Alternative 2** would reduce allowable harvest approximately 50% relative to **Alternative 1** and is likely to constrain fishing opportunities for all users. Commercial operators, particularly those heavily invested in DWG IFQ shares, may experience reduced revenue and operational flexibility. While the IFQ system allows year-round harvest and quota trading, some shareholders may find it more difficult to maintain profitability at lower allocation levels. In the recreational sector, lower catch limits may reduce opportunities for deep-drop trips targeting DWG, especially in areas with growing interest in these fisheries. Anglers and for-hire operators may experience shorter seasons. Overall, while **Preferred Alternative 2** aligns with scientific recommendations and aim to prevent overfishing, it introduces near-term constraints but is expected to provide long-term social benefits as compared to **Alternative 1,** as it is expected to grow the stock size over time consistent with the management objectives for the complex.

4.1.5 Effects on the Administrative Environment

Actions to control harvest that are recommended by the Council and implemented by National Marine Fisheries Service (NMFS) are mostly routine and conducted through the process as established by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Additionally, through the use of ACLs and AMs, the Council and NMFS prevent overfishing and reduce the likelihood of the DWG complex becoming overfished. This reduces the need to take further management action.

Alternative 1 would result in retaining the current F_{MSY} proxy and catch levels for DWG; however, because $F_{30\%SPR}$ and the current catch limits for DWG species are not considered by the Council's SSC or NMFS to be consistent with the best scientific information available, **Alternative 1** is not a viable alternative. **Preferred Alternative 2** would redefine the F_{MSY} proxy for DWG as $F_{40\%SPR}$ and revise the catch limits based on the results of the most recent stock assessment for yellowedge grouper and SSC advice. **Preferred Alternative 2** would be expected to have beneficial effects on the administrative environment because it would be expected to allow a more sustainable rate of harvest, reducing the likelihood of overfishing in the future.

4.2 Action 2: Modification of Deep-Water Grouper Sector ACLs and Sector Allocations

4.2.1 Effects on the Physical Environment

Modifying the sector allocations and catch limits is not expected to result in substantial effects on the physical environment as neither sector is expected to change how they participate in the multi-species reef fish fishery. The catch limits proposed in all of the alternatives would result in a substantial reduction in DWG harvest for both fishing sectors. DWG species are targeted by both sectors and may be captured recreationally when fishing for other reef fish species, or commercially when a vessel does not have sufficient DWG IFQ allocation available to retain and land DWG species. The effects on the physical environment as result of **Alternative 1**, **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** are not expected to be measurably differen.t

4.2.2 Effects on the Biological and Ecological Environment

Decreasing the catch limits reduces the number of fish that can be harvested. In the case of DWG species, and particularly for yellowedge grouper, a decrease in the DWG complex catch limits is necessary to end overfishing. Decreasing the catch limits for DWG may also cause an increase in regulatory discards if some species are caught while targeting other reef fish species. The 2023 SEDAR 85 stock assessment characterized the nature of commercial and recreational discards of yellowedge grouper, which are commonly from waters exceeding 300 feet in depth. Discards are primarily from the commercial fleet due to insufficient allocation in the DWG share category of the Grouper-Tilefish IFQ program. Recreational discards would only be due to reaching the combined recreational bag limit for the recreational vessel, or if there was a season or quota closure. Neither the commercial nor recreational sectors are constrained by a minimum size limit for any DWG species. Due to the depths fished, the assumed discard mortality rate for all fleets was estimated at 100% in SEDAR 85.

As discussed in 4.1.2, both fishing sectors in the Gulf target multiple species of reef fish throughout the year; thus, regulatory discards of DWG may increase for some fleets with the implementation of lower catch limits. However, even with the chance of increased discards, overall mortality of DWG species is expected to be reduced. In addition, although many reef fish species are caught on trips where DWG species are also harvested, it is unclear the extent to which DWG species are harvested when targeting other reef fish species. Many species (e.g., red snapper, vermilion snapper, greater amberjack and other jacks) can be captured when fishing for DWG because these species occur at shallower depths above where DWG species occur and are thus caught when dropping or retrieving lines to or from these deep depths. However, it is likely that when these other species are targeted, DWG species are less likely to be captured because fishing effort would not occur at depths at which DWG are commonly captured in the event of a quota closure. Thus, the number of discards of DWG species is likely small when other common reef fish species are targeted. Commercial fishing would continue to be controlled by the Grouper-Tilefish IFQ program, with commercial fishermen at liberty to determine when they want to land DWG species based on the amount of DWG allocation, they

have available. Recreational fishing for reef fish is classically a multi-species activity, and directed fishing effort on DWG species may be redirected to other species if DWG species are closed to harvest. See Appendix C for a complete analysis on bycatch impacts based on the alternatives considered in this action.

Any modification to the sector allocation is not expected to substantially affect the biological environment. Any effect of moving allocation from one sector to another, as it relates to depth fished and any resultant mortality, is expected to be negligible. Further, the reductions in the sector catch limits associated with **Alternative 1**, **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** are expected to provide beneficial effects on the complex because they are based on the proposed the reduced complex catch limits in Action 1. **Alternative 1** would not establish a recreational ACL, which would make it difficult to constrain recreational harvest and recreational landings have regularly exceeded the unallocated portion of the complex ACL. **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** would each be expected to have greater biological benefits than **Alternative 1** because they would establish a recreational ACL, which is necessary to implement an effective recreational AM in Action 3. Recreational and commercial fishermen both harvest DWG species from similar depths using hooks, and as such realize similar discard mortality rates. Thus, realized differences in annual harvests between these alternatives are only expected based on the ability of NMFS to constrain recreational harvest to the catch limits set in this action. It is generally assumed that lower recreational catch limits are more likely to result in harvest overages (or underages) of those catch limits due to difficulties in constraining harvest to these levels with limited or imprecise data. If lower recreational catch limits from Action 2 alternatives result in more frequent harvest overages of catch limits, then effects to the biological environment would be least positive under **Alternative 1** and **Alternative 2**, followed by **Alternative 3**, and would be the most positive under **Preferred Alternative 4**. However, if NMFS is able to constrain landings to the recreational ACL, the difference in effects between the **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** is negligible within the projection period of 2025 – 2029. As mentioned in Chapter 2, underreporting of harvest due to survey limitations may further confound the estimation of biological effects for this action.

Any impacts to other aspects of the biological environment, included effects on ESA-listed species and critical habitat, are expected to be minor because modifications to the DWG catch limits would not change the fishing methods used or change the way in which the reef fish fishery as a whole is prosecuted.

4.2.3 Effects on the Economic Environment

Alternative 1 would maintain the current sector allocations and ACLs. With the commercial sector allocation defined at 96.5% and the recreational sector undefined, the recreational sector has operated through use of the remaining 3.5% of the allocation. Historical recreational landings have regularly exceeded this 3.5% allocation. However, the effects of the reduction in the allowable recreational harvest as compared to historical landings is accounted for in Section 4.1.3. For the purposes of this analysis, it is assumed that recreational harvest would be constrained to the recreational portion of the complex ACL. Therefore, no economic effects are expected from **Alternative 1**. No economic effects are expected from **Alternative 2** either since

it retains the 96.5% commercial sector allocation and defines the recreational sector allocation as 3.5%. **Preferred Alternative 3** and **Alternative 4** would revise the sector allocations and ACLs and are expected to result in economic effects.

Commercial Sector

For the commercial sector, the comparison of effects is based on the resulting quota from **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** relative to that of **Alternative 1**. Since historical landings exceed the new commercial ACL set in Action 1, they are irrelevant for comparing the allocation alternatives in Action 2, since all will be constraining on harvest. Furthermore, the analyses here incorporate the expectation that the full potential of the quota will be realized under **Alternative 1**, since historical landings exceed the new quota.

To calculate expected changes in commercial CS, own-price flexibility[31] for the Gulf DWG commercial sector would be required to derive the expected average price change. Keithly and Tabarestani (2018) estimated an uncompensated own-price flexibility for "GOM Other Grouper," inclusive of DWG, of -0.396. If own-price flexibility is unavailable, price is assumed constant with changes in the commercial quota, and if the expected average price change is zero, then multiplying that by the change in expected harvest by the commercial sector under the proposed quota to arrive at the expected change in commercial CS for DWG would result in a value of zero. However, for DWG, the expected change in commercial CS can be derived using the own-price flexibility for "GOM Other Grouper." The expected changes in commercial CS are displayed in Table 4.1.3.2, as are the expected average price changes, which are based on the calculated percent change in price multiplied by the new status quo price (the new price of $7.48 from Action 1 Preferred Alternative 2).

Table 4.2.3.1. Expected change in the commercial sector's CS, relative to **Alternative 1**. Values are in 2024$.

Alternative	Expected Change in Landings by Commercial Sector (lb gw)	Expected Average Price Change ($/lb)	Expected Change in CS (2024$)
Alt 2	0	$0	$0
Preferred Alt 3	-35,735	$0.21	-$102,220
Alt 4	-17,796	$0.10	-$51,802

To determine the respective expected change in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quotas from **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** are multiplied by the sum of the expected average

[31] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

price change from Table 4.2.3.1 and the average ex-vessel price per lb gw of $7.48 for DWG from 2019-2023 (2024$). From that value is then subtracted the average ex-vessel price per lb gw of $7.48, multiplied by **Alternative 1's** quota. The expected changes in revenue are displayed in Table 4.2.3.2.

Table 4.2.3.2. Expected change in commercial sector revenue relative to **Alternative 1** in 2024$.

Alternative	Expected Change in Comm Revenue
Alt 2	$0
Preferred Alt 3	-$168,891
Alt 4	-$82,227

The commercial PS for vessels that harvested DWG complex species in the Gulf is estimated as 53.7% of the ex-vessel value (section 3.3.1). The expected changes in commercial PS are shown in Table 4.2.3.3.

Table 4.2.3.3. Expected change in commercial sector PS relative to **Alternative 1** in 2024$.

Alternative	Expected Change in Comm PS
Alt 2	$0
Preferred Alt 3	-$90,694
Alt 4	-$44,156

The total expected changes in net economic benefits for the commercial sector from **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** relative to **Alternative 1** are calculated by adding the expected change in commercial CS from Table 4.2.3.1 to the expected change in commercial PS from Table 4.2.3.3. The values are displayed in Table 4.2.3.4.

Table 4.2.3.4. Total expected change in net economic benefits for the commercial sector relative to **Alternative 1**. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits to the Commercial Sector
Alt 2	$0
Preferred Alt 3	-$192,914
Alt 4	-$95,958

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a per fish CS estimate. The most recent proxy for a CS estimate for a DWG species is the estimated value of the CS for a one fish change in grouper harvest, derived from keeping a second grouper on an angler trip. A value of $131

(Carter and Liese 2012; values updated to 2024$) reflect recreational willingness-to-pay (WTP) for one additional grouper harvest. This might overestimate the WTP of a DWG fish for Gulf recreational fishermen as a whole, if Gulf recreational fishermen are retaining more than one DWG fish per trip, since WTP decreases as additional fish are retained.

The expected change in the number of fish harvested is calculated by dividing the change in the recreational sector's allowable harvest by 9.79 lb gw, which is the weighted average weight of a recreational landed DWG fish in the Gulf from the 2020 to 2024 fishing years.[32] Multiplying the expected change in the number of fish expected to be landed by the recreational sector by the estimated value of the CS provides the expected change in CS for the recreational sector, as seen in Table 4.2.3.5.

[32] Landings were reported in paired species as black grouper and yellowfin grouper and as scamp and yellowmouth grouper. The percentage each pair represented for the overall recreational landings was averaged over 2018-2023, excluding 2020, and multiplied by the average recreationally landed weight of the predominantly landed species for each pairing (black grouper and scamp) over 2020-2024 (M. Larkin, SERO pers. comm. 2025), and then summed to get a representative weight for a recreationally landed Other SWG fish.

Table 4.2.3.5. Expected change in recreational sector CS, relative to **Alternative 1** in 2024$.

Alternative	Expected Change in Rec Sector Landings, Expressed as Number of Fish	Expected Change in Rec Sector CS
Alt 2	0	0
Preferred Alt 3	3,804	$498,339
Alt 4	1,894	$248,055

The PS of the for-hire component of the recreational sector, being comprised of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught. Therefore, an assumption that no headboat trips would be gained due to a change in the recreational sector's allowable harvest would be reasonable. However, charter vessel trips that are targeting DWG may be added by anglers and are the focus of the recreational sector PS analysis. Table 3.3.2.1 shows that an average of 60 target trips by charter mode for DWG in the Gulf were made from 2019-2023, which accounts for roughly 2.46% of all recreational target trips for DWG in the Gulf from 2019-2023. In contrast, an average of 6,244 catch trips by charter mode for DWG in the Gulf were made from 2019-2023. This suggests that DWG fish are incidentally harvested species. Therefore, a change in demand for for-hire trips would not be expected. While it is possible that some trip additions might occur, minimal effects are expected.

The effects to the recreational sector are contingent on the sector's landings being constrained to its allowable harvest. A management constraint, in form of a modification to the recreational sector accountability measure, is considered in Action 3. Should the No Action alternative in Action 3 be selected as the preferred alternative, additional positive effects to the recreational sector discussed in this section could occur.

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors are displayed in Table 4.2.3.6.

Table 4.2.3.6. Total expected change in net economic benefits for the both the recreational and commercial sectors relative to **Alternative 1**. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits
Alt 2	$0
Preferred Alt 3	$305,425
Alt 4	$152,097

4.2.4 Effects on the Social Environment

Generally, as stated for Action 1, the reduction in catch limits is expected to result in negative social effects for both fishing sectors, but in particular for the commercial sector. This is due in large part to the amount of quota available to the commercial fishermen being reduced by at least approximately 50%. Further reallocation under some alternatives in Action 2 may further exacerbate these expected negative social effects.

Under **Alternative 1** (No Action), 96.5% of the ACL would remain assigned to the commercial sector, and the recreational share would remain undefined. This structure has provided operational stability for commercial IFQ participants, particularly in Madeira Beach and Panama City, Florida, and Galveston, Texas. These socially vulnerable ports would see no relief from the reduction in the ABC for DWG, and recreational anglers would remain subject to early season closures. **Alternative 1** also limits the ability of NMFS to monitor and manage the recreational sector effectively, especially under reduced catch limits. **Alternative 2** would codify a recreational ACL based on the existing 3.5% of the ACL that is available to the recreational sector. This may be perceived by anglers and for-hire operators as overly restrictive, particularly given the change to MRIP-FES and the more recent estimates of increased recreational effort and landings. **Preferred Alternative 3** would increase the recreational share to 10.21% based on recent recreational landings data (2019–2023), potentially improving perceptions of fairness among the recreational sector, but reducing the commercial allocation. The additional allocation to the recreational sector measurably increases the fishing season duration, benefitting for-hire operators and widening public access across multiple Gulf states. This alternative disperses benefits more broadly due to the general distribution of recreational fishing effort and reduces dependence risk in single-species ports. However, negative social effects would be expected to be greatest for the commercial sector under **Preferred Alternative 3**, as it would reduce the commercial quota in most of the alternatives proposed in Action 2. **Alternative 4** applies proportional reductions across both sectors based on recent landings, offering a compromise that may be more acceptable to stakeholders seeking an equitable reallocation. Social benefits and costs are muted relative to **Preferred Alternative 3**, offering a compromise with limited redistribution of allowable catch.

All alternatives would require adaptation by IFQ participants, who may face reduced allocations and fewer crew working days and may lead to changes in commercial participants' sense of place in ports most vulnerable to the proposed catch reductions. Recreational users may need to adjust expectations for access or trip planning. Recreational users' sense of place may also be affected by sector allocation changes, especially when that sense of place is directly tied to recreational fishing opportunity or access available in a particular place. Changes in sector allocations can influence stakeholder trust and perceptions of procedural fairness, particularly where long-standing entitlements or economic investments are at stake. Table 4.2.4.1 characterizes the relationships between the alternatives in Action 2 and select relevant social dimensions which may have bearing on the proposed action.

Table 4.2.4.1. Breakdown of social effects of Action 2 relative to the current social environment for the reef fish fishery in the Gulf.

Dimension	Alt 1 – No action	Alt 2 – Specify Rec ACL	Pref Alt 3 – Recent-history shift	Alt 4 – Equal-reduction shift
Commercial season & revenue	Quota reduction is expected to be limiting, negatively affecting crew workdays and revenue.	Same as Alt 1.	Commercial quota cut is spread across IFQ participants. Madeira Beach, Panama City and Galveston dealers most affected; crew workdays may be reduced.	Intermediate impact between Alternatives 2 and 3 (-18,000 lb gw).
IFQ dynamics	Annual available allocation reduced with commercial quotas, allocation price increases.	Same as Alt 1.	Small to medium shareholders experience greater allocation price increases due to less annual allocation available.	Less pronounced allocation price pressure than **Pref Alt 3**.
For-hire sector & private anglers	Recreational harvest uses ineffective AM; early closures unlikely in high-catch years due to data uncertainty.	Administrative clarity with an actual recreational ACL, but very prone to early closure; little relief for charter operations.	Extra allocation versus Alt 2 keeps the recreational season open several additional weeks. Charter/headboat operators in Destin, Orange Beach and Galveston expect more bookings compared to Alt 2.	Gains about half as large as in **Pref Alt 3**. Season likely extended by a week or so compared to Alt 2; modest benefit to for-hire fleet.
Community-level distribution	Benefits kept in core commercial ports; rec-dependent towns see limited value.	Same pattern as Alt 1.	Shifts some economic activity toward highly recreational ports.	Partial shift; still heavily commercial-weighted.
National Standard 8 (community impacts)	Maintains status quo benefits to commercial communities but offers limited access to broad recreational constituency.	Same as Alt 1.	Balances localized commercial losses with recreational gains; reduces disparity between sectors, keeps major ports viable.	Minor re-balancing: commercial communities protected; recreational gains modest.

4.2.5 Effects on the Administrative Environment

Modifying the sector allocations and catch limits does not typically result in significant effects on the administrative environment. All of the alternatives would result in a short-term increased burden on the administrative environment due to the establishment of a revised sector allocation and its associated catch limits. However, engaging in rulemaking to implement this change in management is a routine function for NMFS that occurs whenever revised catch recommendations come from the SSC. **Alternative 1**, **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4** would no longer require NMFS to convert landings from MRIP-FES to MRFSS to account for recreational landings. This is because the alternatives in Action 2 are informed by Alternative 2 in Action 1. Some administrative burden is anticipated under any of the alternatives in Action 2 with respect to outreach as it relates to notifying stakeholders of the changes to the sector allocation and ACLs. None of the anticipated effects are expected to be significant. All Action 2 alternatives are expected to result in a reduced probability of overfishing and a reduced probability that yellowedge grouper would become overfished. An overfished determination would result in greatly increased administrative burden. Thus, all alternatives would have a net positive effect on the administrative environment.

4.3 Action 3: Modification of Deep-Water Grouper Recreational Accountability Measures

4.3.1 Effects on the Physical Environment

Modifications to the recreational sector AMs are expected to result in neutral effects on the physical environment as no change is expected to current recreational fishing practices used in the multi-species reef fish fishery. Fishing would be expected to occur for other reef fish species when recreational fishing for DWG species is closed. Thus, the effects on the physical environment of **Alternative 1**, **Alternative 2**, **Alternative 3**, and **Preferred Alternative 4** in Action 3 are expected to be neutral.

4.3.2 Effects on the Biological and Ecological Environment

If a recreational ACL is established in Alternative 2 – 4 in Action 2, and the recreational ACL is exceeded, then an AM would be expected to be triggered in some manner based on the alternatives in Action 3 to mitigate the negative impacts of that overage on the DWG complex.

The expected effects on the biological environment as a result of the alternatives in Action 3 depend in part on NMFS' ability to predict when to close the recreational sector to fishing for DWG species. The uncertainty in the recreational landings data, expressed as proportional standard error, often exceeds 50%. Further, the imprecision in these MRIP data can lead to imprecision in the estimation of recreational fishing season duration, as season duration projections are only as precise as the data upon which they are calculated. In addition, as described in Section 2.2 of this document, there is bias towards underreporting of recreational landings based on the manner in which the DWG fishery is prosecuted. However, these data are all that are available in a uniform data unit for the recreational sector for DWG species.

Alternative 1, **Alternative 2**, and **Alternative 3** use a post-season AM based on DWG complex landings exceeding the complex ACL (**Alternative 1**), recreational landings exceeding the recreational ACL (**Alternative 2**), or recreational and complex landings exceeding their respective ACLs (**Alternative 3**). **Alternative 1** is expected to result in more frequent overages of the complex ACL because it could only close the fishery upon projection that the complex ACL would be met, and this closure would likely occur prior to the commercial quota being harvested in its entirety. Thus, **Alternative 1** would likely result in overages of the DWG stock complex ACL and would thus result in the greatest negative effects on the DWG stock. **Alternative 2** and **Alternative 3** are evaluated and may be triggered on an annual basis. In relation to the biological environment, there is no appreciable difference between these alternatives. **Preferred Alternative 4** is based on whether the average recreational DWG landings exceed the recreational ACL, and whether the stock complex ACL is also exceeded, over a three-year moving period. This means that both the recreational ACL and complex ACL could be exceeded in a fishing year without triggering the AM in the following year, so long as the three-year average does not exceed the recreational and complex ACL, respectively. However, it is also possible that one outlier year of extremely high reported landings (due to imprecision in the data) could trigger a closure for multiple years, even if the years following the

year of high reported landings are at or below average. Thus, while the short-term impacts on biological effects are difficult to predict under **Preferred Alternative 4**, long-term biological effects of **Preferred Alternative 4** relative to **Alternative 1**, **Alternative 2**, and **Alternative 3** are expected to be neutral.

4.3.3 Effects on the Economic Environment

Commercial Sector

As this action addresses the recreational AMs for the DWG complex, no economic effects to the commercial sector are expected.

Recreational Sector

Qualitative analysis of the effects of reducing the catch limits and adjusting the recreational allocation are presented in Sections 4.1.3 and 4.2.3. This section discusses additional impacts that may result from modifying the recreational AM. **Alternative 1** would maintain the current recreational AMs for the DWG complex. No economic effects are expected from this alternative. **Alternatives 2** and **3** and **Preferred Alternative 4** are contingent upon the establishment of a recreational ACL in Action 2. **Alternative 2** is expected to be the most restrictive of the proposed alternatives, as the AM would be triggered if the recreational ACL is exceeded in a single year and would therefore have the greatest negative effects to the recreational sector as a result of a shorter recreational fishing season and the corresponding reduction in recreational CS from fewer fish harvested. **Alternative 3** is expected to be the second-most restrictive of the proposed alternatives, as the AM would be triggered if both the recreational ACL and the complex ACL are to be exceeded in a single year and would have the second greatest negative effects to the recreational sector. **Preferred Alternative 4** is expected to be the third-most restrictive of the proposed alternatives, as the AM would be triggered if the average recreational landings exceed the average recreational ACL, and the average total landings exceed the average complex ACL over a three-year moving period. **Alternative 3** and **Preferred Alternative 4** have fewer negative effects than **Alternative 2** since they provide for additional usage of the complex ACL. So long as the complex ACL is not exceeded, either in a single year (**Alternative 3**) or in a three-year moving period (**Preferred Alternative 4**), the AM would not be triggered if the recreational ACL is exceeded.

4.3.4 Effects on the Social Environment

Alternative 1 (No Action) would retain the current AM, which triggers a closure only if the stock complex ACL is exceeded, offering limited control over recreational overages given that commercial IFQ landings are not finalized until the end of the year. **Alternative 2** would implement a closure in the year following any recreational ACL overage, providing a strong but potentially abrupt consequence that may disrupt for-hire operations and trip planning. Although closures may still occur in busy years, their timing is more transparent. **Alternative 3** would only trigger closure if both the recreational ACL and the stock complex ACL are exceeded, offering a more tempered approach but potentially delaying corrective action. Because

simultaneous overages are rare, recreational access becomes more reliable, supporting recreational fishing in highly reliant ports. **Preferred Alternative 4** would modify the recreational fishing season if the average recreational DWG landings exceed the average recreational ACL, and the average complex ACL is exceeded over a three-year moving period. This approach avoids immediate closures, offering greater predictability for anglers and for-hire businesses while still constraining the recreational sector when the AM is triggered.

Across alternatives, social impacts will likely be shaped by the recreational sector's trust in landings data, and their respective ability to adapt to new catch limits and fishing season closures when they occur. Regional differences in participation and reliance on DWG species, particularly in parts of Florida and other areas with active offshore fleets, may also influence how AMs are experienced on the water. Table 4.3.4.1 characterizes the relationships between the alternatives in Action 3 and select relevant social dimensions which may have bearing on the proposed action.

Table 4.3.4.1. Breakdown of social effects of Action 3 relative to the current social environment for the recreational reef fish fishery in the Gulf.

Dimension	Alt 1 – No Action (*combined* landings trigger)	Alt 2 – Rec-only trigger	Alt 3 – Rec and complex trigger	Pref Alt 4 – Dual 3-yr moving-average trigger
Access predictability for anglers & for-hire operators	Closure timing depends on *commercial* progress, which is uncertain until year end.	Closure depends solely on recreational catch, which use delayed and uncertain data.	Closure less likely; only triggered after simultaneous overages.	Like Alt 3, but without the reaction to single high-catch years.
Typical season duration, under Alt 3 in Action 2	Open most of calendar year before closure based on high-catch years.	Could shorten season by 2–3 weeks in years of strong effort.	Similar to Alt 1	Season even less likely to close, as trigger is not as vulnerable to single high-catch years
Economic stability for for-hire businesses	Season duration corrections could hurt operations reliant on summer bookings in Destin, Panama City and Orange Beach.	Cancellations likely since season duration will be hard to anticipate based on untimely and uncertain recreational landings data	Less disruption since closure based on all landings. Businesses can advertise consistent DWG access for most years.	Least disruption. Low vulnerability to single high-catch years means more consistent season durations.
Conflict between sectors	Status quo, with recreational sector able to fish anything not caught by the commercial sector.	Removes dependence on magnitude of commercial landings by recreational sector; viewed as fairer application of ACLs.	Less conflict: directly accounts for recreational landings against that ACL, plus total landings against the complex ACL	Shifts focus from single-year reaction to multi-year performance, easing inter-sector tension.
Community-level impact	Little impact given the difficulty in predicting a closure before year-end commercial landings are known	Greater season duration uncertainty from untimely and imprecise data, resulting in less predictable fishing season durations.	Lower risk, as complex ACL must also be exceeded before a season duration correction is applied in the following year.	Lowest risk, as focus on multi-year landings performance eliminates reactionary response to single high catch years.

4.3.5 Effects on the Administrative Environment

This action would affect the administrative environment mostly through post-season closures for the recreational sector that are more likely to be triggered than under current management. This is because the current management under **Alternative 1**, based on no defined recreational ACL under Alternative 1 in Action 2, would only constrain harvest to the stock complex ACL if NMFS assumed that the commercial sector would land its quota every year and closed the recreational sector, when necessary, based on that assumption. However, the AM is not worded in a manner that would allow for this. The commercial sector will not have a seasonal closure due to the use of the Grouper-Tilefish IFQ program for DWG species, and because no commercial seasonal closure is considered in this document. A closure of the recreational sector for DWG species would only have minor effects on the administrative environment as closures already occur for many reef fish species and are expected to occur for DWG species in the foreseeable future regardless of the alternative chosen in this action. Based on the probability of the recreational ACL being exceeded, it is most likely that **Alternative 2** would be triggered, followed by **Alternative 3**, and **Preferred Alternative 4**. There is no effect on the administrative burden for law enforcement as law enforcement officers do not monitor catch limits but would only continue to monitor compliance with any established closed season. Some administrative burden is anticipated with respect to outreach as it relates to notifying stakeholders of the changes to the recreational fishing season, and any post-season recreational closures that occur. None of the expected effects are expected to be significant.

4.4 Cumulative Effects Analysis

Cumulative effects are those effects that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions (RFFA), regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative effects can result from individually minor, but collectively significant actions that take place over a period of time. The cumulative effects analysis in this environmental assessment evaluates the following five criteria.

1. The area in which the effects of the proposed action will occur - The affected area of these proposed actions encompasses the state and federal waters of the Gulf, as well as Gulf communities that are dependent on reef fish fishing. Most relevant to these proposed actions are DWG species and those who fish for them. For more information about the area in which the effects of this proposed action would occur, please see Chapter 3, Affected Environment, which describes these important resources as well as other relevant features of the human environment.

2. The impacts that are expected in that area from the proposed action - The proposed actions would modify Gulf DWG SDC, catch limits, catch allocations between the recreational and commercial sectors, and the recreational AMs. The environmental consequences of the proposed actions are analyzed in Sections 4.1, 4.2, and 4.3, and are not expected to be significant. The combined actions are not expected to have significant effects on the physical environment, as they are not expected to alter how the DWG portion of the reef fish fishery is prosecuted (Sections 4.1.1, 4.2.1, and 4.3.1). These measures are expected to have non-significant but positive effects on the biological environment because the actions would reduce DWG harvest and mortality and end overfishing of yellowedge grouper (Section 4.1.2, and 4.2.2). Regulatory discards are expected to increase because the DWG recreational fishing season duration would be expected to be reduced, and thus DWG species would need to be discarded when caught while fishing for other species. In particular, species in the mid-water snapper fishery can be caught while fishing for DWG species, which may result in DWG discards by the recreational sector (Section 4.3.2). Despite this change, overall DWG species mortality is expected to decrease. Further, changing fishing practices on one stock does not generally change overall fishing effort or fishing practices. Although it is likely that a short-term negative effect on the social and economic environments would occur due to the actions taken herein, as the stock rebuilds to the spawning stock biomass level commensurate with MSY, benefits to the economic (Sections 4.1.3, 4.2.3, and 4.3.3) and social environments (Sections 4.1.4, 4.2.4, and 4.3.4) are expected. The actions are not expected to significantly affect the administrative environment (Sections 4.1.5, 4.2.5, and 4.3.5), adversely or beneficially.

3. Other past, present and future RFFAs that have or are expected to have impacts in the area - There are numerous actions under development in the Gulf annually. Many of these activities are expected to have impacts associated with them and are listed below.

Other fishery related actions - The cumulative effects associated with modifying DWG ACLs and quotas were analyzed in the environmental impact statement (EIS) for the Generic ACL/AM Amendment (GMFMC 2011a). These cumulative effects analyses are incorporated here by

reference. Other pertinent actions are summarized in the history of management (Section 1.3). Currently, there are several present and RFFAs that are being considered by the Council for the Reef Fish FMP or implemented by NMFS, which could affect reef fish stocks. These include Amendment 58A, which proposes to revise shallow-water grouper management measures; Amendment 59A, which would revise permit requirements for participation in the Grouper-Tilefish commercial IFQ programs; Amendment 59B, which would revise active participation requirements in the Grouper-Tilefish commercial IFQ programs; Amendment 60, which would address commercial IFQ programmatic distributional issues; Amendment 62, which would modify red grouper catch limits; and Amendment 63, which would establish a quota bank for red grouper. Two framework actions are also being developed: a reef fish framework that proposes to modify the shallow-water grouper catch limits and recreational fishing season ahead of Amendment 58A; and a generic framework that addresses essential fish habitat. Lastly, NMFS developed an emergency rule to increase the red grouper catch limits for 2025. There are no documents currently being considered for implementation by NMFS that could directly affect DWG species. Descriptions of these actions can be found on the Council's Website.

Non-fishery related actions - Actions affecting the reef fish fishery have been described in previous cumulative effects analyses. An important event includes impacts of the Northern Gulf Hypoxic Zone (See Sections 3.1 and 3.2) and the Deepwater Horizon MC252 Oil Spill. DWG species, while mobile, have an unknown susceptibility to hypoxic conditions and effects from the Deepwater Horizon oil spill on this species complex have not been analyzed, so any effects from the Northern Gulf Hypoxic Zone on DWG species are unknown.

4. The impacts or expected impacts from these other actions - The cumulative effects from managing the reef fish fishery have been analyzed in multiple other actions. They include a detailed analysis of the reef fish fishery, cumulative effects on non-target species, protected species, and habitats in the Gulf. Overall, bycatch of protected species in the DWG portion of the reef fish fishery is negligible and effects to habitat are minimized due to the gear types used for harvest (Section 3.2). The effects of this action are positive, as they ultimately reduce overfishing of yellowedge grouper, which is expected to result in increased fishing opportunities in the future. Short-term negative impacts on the social and economic environments are expected due to shortened recreational fishing seasons and limited allowable harvest of DWG species. However, as the yellowedge grouper stock rebuilds, benefits to the economic and social environments are expected. Furthermore, it is assumed that recreational fishing trips would occur regardless of whether DWG is open for recreational harvest, as recreational fishing for DWG species is generally part of a multi-species fishing strategy and fishermen typically switch to targeting other species when harvest is closed.

5. The overall impact that can be expected if the individual impacts are allowed to accumulate - These actions, combined with other past actions, present actions, and RFFAs, are not expected to have significant beneficial or adverse effects on the physical and biological environments. Any effects are expected to be positive but are not expected to substantially change the way the reef fish fishery is prosecuted (Sections 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.3.1, and 4.3.2). For the social and economic environments, some negative short-term but positive long-term effects are expected to result for fishing communities from reducing allowable harvest and shortening the fishing season (Sections 4.2.3, 4.2.4, 4.3.3, and 4.3.4). These effects are likely minimal, as the proposed action,

along with other past actions, present actions, and RFFAs, are not expected to alter the way the fishery is prosecuted. Because it is unlikely there would be any changes in how the fishery is prosecuted, these actions, combined with past actions, present actions, and RFFAs, are not expected to have significant adverse effects on public health or safety.

6. Summary - The proposed actions are not expected to have individual significant effects on the physical, biological, economic, or social environments. Any effects of the proposed action, when combined with other past actions, present actions, and RFFAs are not expected to be significant. The effects of the proposed actions are, and will continue to be, monitored through collection of landings data by NMFS, individual state programs, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. Landings data for the recreational sector in the Gulf are presently collected through MRIP, Louisiana Creel Survey, Mississippi Creel Survey, Alabama Creel Survey, Southeast Region Headboat Survey, Florida's State Reef Fish Survey, and the Texas Parks and Wildlife Department. The cumulative social and economic effects of past, present, and future amendments may be described as increasing fishing opportunities, resulting in positive social and economic impacts. The proposed actions in this environmental assessment are expected to result in important long-term benefits to fishing communities and associated businesses.

CHAPTER 5. REGULATORY IMPACT REVIEW

5.1 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 Deep-water Grouper (DWG) complex component of the Gulf of America (Gulf) reef fish fishery.

5.2 Problems and Objectives

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

5.3 Description of Fisheries

A description of the economic environment of the DWG complex component of the Gulf reef fish fishery is provided in Section 3.3.

5.4 Impacts of Management Measures

5.4.1 Action 1: Modification of DWG Maximum Sustainable Yield (MSY) Proxy, Overfishing Limit (OFL), Acceptable Biological Catch (ABC), and Complex Annual Catch Limit (ACL)

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3. The following discussion analyzes the expected economic effects and impacts of the preferred alternative relative to the No Action alternative. Furthermore, this analysis uses only values generated from the lower bound estimate described in Section 4.1.3, as those values are more likely to occur because they incorporate historical landings. Values from the upper bound estimate are available in Section 4.1.3.

Alternative 1 (No Action) would maintain the current catch limits for the DWG complex. **Preferred Alternative 2** would reduce the complex OFL to 731,035 pounds (lb) gw and reduce the ABC to 555,026 lb gw. The complex ACL would still be set equal to the ABC and, as a result, would be reduced by 549,974 lb gw. However, to analyze the effects of this action, a determination of how much **Preferred Alternative 2** would reduce the amount of fish available to the commercial and recreational sectors is required. To calculate this reduction, the analysis

applies the current commercial sector allocation of 96.5% and the current undefined recreational sector allocation, understood to be the remaining 3.5%.

Commercial Sector

For the commercial sector, the comparison of effects is based on the resulting quota (which is set 4% below the commercial ACL) from **Preferred Alternative 2** (514,176 lb gw) relative to that of historical landings under **Alternative 1** (2019 – 2023 landings are shown in Table 3.3.1.1; 2018 DWG landings are 817,452 lb gw). Commercial landings have generally been less than the current commercial quota, and the 5-year average of historical commercial landings (2018 - 2023, excluding 2020) of 746,230 lb gw is used for analyses. The historical commercial landings used for these analyses includes landings of scamp, which are other shallow-water grouper (Other SWG) species landed using DWG quota as part of the DWG/SWG flexibility measures established in Amendment 29 to the Reef Fish FMP (GMFMC 2009). From 2021 - 2024, landings of scamp under DWG quota averaged 992 lb gw, with a standard deviation of 595 lb gw (SERO Catch Share Database, accessed August 2025).

To calculate expected changes in commercial consumer surplus (CS), own-price flexibility[33] for the Gulf DWG commercial sector would be required to derive the expected average price change. Keithly and Tabarestani (2018) estimated an uncompensated own-price flexibility for "GOM Other Grouper," inclusive of DWG, of -0.396. If own-price flexibility is unavailable, price is assumed constant with changes in the commercial quota, and if the expected average price change is zero, then multiplying that by the change in expected harvest by the commercial sector under the proposed quota to arrive at the expected change in commercial CS for DWG would result in a value of zero. However, for DWG, the expected change in commercial CS can be derived using the own-price flexibility for "GOM Other Grouper." The lower bound of the expected change in commercial CS from **Preferred Alternative 2** is -$516,851 (2024$), and the expected average price change is $0.82 ($/lb), which is based on the calculated percent change in price multiplied by the average ex-vessel price from 2019-2023.

To determine the lower bound of the respective expected changes in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quota from **Preferred Alternative 2** is multiplied by the sum of the lower bound of the expected average price change ($0.82) and the average ex-vessel price per lb gw of $6.66 for DWG from 2019 - 2023 (2024$). From that value is then subtracted the average ex-vessel price per lb gw of $6.66 multiplied by the average commercial landings from 2018 - 2023, excluding 2020, which are 746,230 lb gw. The resulting expected change in commercial revenue is -$1,123,784 (2024$).

The commercial producer surplus (PS) for vessels that harvested DWG complex species in the Gulf is estimated as 53.7% of the ex-vessel value (section 3.3.1). The expected change in

[33] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

commercial PS is calculated by multiplying 53.7% by the expected change in commercial revenue and is -$603,472 (2024$).

The lower bound of the total expected change in net economic benefits for the commercial sector from **Preferred Alternative 2** relative to **Alternative 1** is calculated by adding the lower bound of the expected change in commercial CS to the lower bound of the expected change in commercial PS. The lower bound of the total expected change in net economic benefits for the commercial sector is -$1,120,323 (2024$).

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a per fish CS estimate. The most recent proxy for a CS estimate for a DWG species is the estimated value of the CS for a one fish change in grouper harvest, derived from keeping a second grouper on an angler trip. A value of $131 (Carter and Liese 2012; values updated to 2024$) reflects the recreational willingness-to-pay (WTP) for one additional grouper harvest. This might over- or underestimate the WTP of a DWG fish for Gulf recreational fishermen, in general, depending on how many fish are kept on each trip, because WTP decreases as additional fish are retained.

To determine the effects from **Preferred Alternative 2** as a result of the difference between historical landings in MRIP-FES and proposed allowable harvest in MRIP-FES, the expected change in the number of fish harvested is calculated by dividing the difference between the recreational sector's allowable harvest of 19,426 lb gw and the average landings for the recreational sector from 2018 - 2023, excluding 2020, of 65,396 lb gw by 9.79 lb gw, which is the weighted average weight of a recreational landed DWG fish in the Gulf from the 2020 to 2024 fishing years.[34] Of note, the recreational sector's average landings from 2018 - 2023, excluding 2020, exceed by almost 70% the undefined recreational sector's ACL, which is considered to be the 3.5% of the complex ACL that is not allocated to the commercial sector; therefore, the economic effects estimated for **Preferred Alternative 2** would be an overestimate. Multiplying the expected change in the number of fish expected to be landed by the recreational sector (-4,696) by the estimated value of the CS provides the expected change in CS for the recreational sector of -$615,126 (2024$).

The PS of the for-hire component of the recreational sector, being comprised of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught.

[34] Landings were reported for speckled hind, yellowedge grouper, warsaw grouper, and snowy grouper. The percentage each species represented for the overall DWG recreational landings was averaged over 2018-2023, excluding 2020, and multiplied by the average recreationally landed weight of that species over 2020-2024 (M. Larkin, SERO pers. comm. 2025), and then summed to get a representative weight for a recreationally landed DWG fish.

Therefore, an assumption that no headboat trips would be lost due to a change in the recreational sector's allowable harvest would be reasonable. However, charter vessel trips that are targeting DWG may be cancelled by anglers and are the focus of the recreational sector PS analysis. Table 3.3.2.1 shows that an average of 60 target trips by charter mode for DWG in the Gulf were made from 2019 - 2023, which accounts for roughly 2.46% of all recreational target trips for DWG in the Gulf from 2019 - 2023. In contrast, an average of 6,244 catch trips by charter mode for DWG in the Gulf were made from 2019 - 2023. This suggests that DWG fish are incidentally harvested species. Therefore, a change in demand for for-hire trips would not be expected. While it is possible that some trip cancellations might occur, the effects would likely be minimal. The negative effects to the recreational sector are contingent on the sector's landings being constrained to its allowable harvest, and a management constraint, in the form of a modification to the recreational sector accountability measure, is the Preferred Alternative in Action 3.

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors can be calculated for the effects from the difference between historical landings and proposed allowable harvest and is -$1,735,449 (2024$).

5.4.2 Action 2: Modification of DWG Sector ACLs and Sector Allocations

A detailed analysis of the economic effects and impacts expected to result from this action is provided in Section 4.2.3. The following discussion analyzes the expected economic effects and impacts of the preferred alternative relative to the No Action alternative.

Alternative 1 would maintain the current sector allocations and ACLs. With the commercial sector allocation defined at 96.5% and the recreational sector undefined, the recreational sector has operated through use of the remaining 3.5% of the allocation. Historical recreational landings have regularly exceeded this 3.5% allocation. However, the effects of the reduction in the allowable recreational harvest as compared to historical landings is accounted for in Section 4.1.3 and subsequently in Section 5.4.1. For the purposes of this analysis, it is assumed that recreational harvest would be constrained to the recreational portion of the complex ACL. **Preferred Alternative 3** would revise the sector allocations (89.79% for the commercial sector and 10.21% for the recreational sector) and ACLs.

Commercial Sector

For the commercial sector, the comparison of effects is based on the resulting quota from **Preferred Alternative 3** relative to that of **Alternative 1**. Since historical landings exceed the new commercial ACL set in Action 1, they are irrelevant for comparing the allocation alternatives in Action 2, since all would be constraining on harvest. Furthermore, the analyses here incorporate the expectation that the full potential of the quota would be realized under **Alternative 1**, since historical landings exceed the new quota.

To calculate expected changes in commercial consumer surplus (CS), own-price flexibility[35] for the Gulf DWG commercial sector would be required to derive the expected average price change. Using the own-price flexibility for "GOM Other Grouper" from Keithly and Tabarestani (2018) as described in Section 5.4.1, the expected change in commercial CS is -$102,220 (2024$), and the expected average price change is $0.21 ($/lb), which is based on the calculated percent change in price multiplied by the new status quo price (the new price of $7.48 from Action 1 Preferred Alternative 2).

To determine the respective expected change in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quota from **Preferred Alternative 3** is multiplied by the sum of the expected average price change from Table 4.2.3.1 and the average ex-vessel price per lb gw of $7.48 for DWG from 2019 - 2023 (2024$). From that value is then subtracted the average ex-vessel price per lb gw of $7.48, multiplied by **Alternative 1's** quota. The expected change in revenue is -$168,891 (2024$).

The commercial producer surplus (PS) for vessels that harvested DWG complex species in the Gulf is estimated as 53.7% of the ex-vessel value (section 3.3.1). The expected change in commercial PS is calculated by multiplying 53.7% by the expected change in commercial revenue and is -$90,694 (2024$).

The total expected changes in net economic benefits for the commercial sector from **Preferred Alternative 3** relative to **Alternative 1** is calculated by adding the expected change in commercial CS (-$102,220) to the expected change in commercial PS (-$90,694) and equals -$192,914 (2024$).

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a per fish CS estimate. The most recent proxy for a CS estimate for a DWG species is the estimated value of the CS for a one fish change in grouper harvest, derived from keeping a second grouper on an angler trip. A value of $131 (Carter and Liese 2012; values updated to 2024$) reflects the recreational willingness-to-pay (WTP) for one additional grouper harvest. This might over- or underestimate the WTP of a DWG fish for Gulf recreational fishermen, in general, depending on how many fish are kept on each trip, because WTP decreases as additional fish are retained.

The expected change in the number of fish harvested is calculated by dividing the change in the recreational sector's allowable harvest by 9.79 lb gw, which is the weighted average weight of a

[35] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

recreational landed DWG fish in the Gulf from the 2020 to 2024 fishing years.[36] Multiplying the expected change in the number of fish expected to be landed by the recreational sector (3,804) by the estimated value of the CS provides the expected change in CS for the recreational sector of $498,339.

The PS of the for-hire component of the recreational sector, being comprised of charter vessels and headboats, would be impacted by a change in the number of targeted trips. However, as discussed in Section 5.4.1, evidence suggests that DWG fish are incidentally harvested species. Therefore, a change in demand for for-hire trips would not be expected. While it is possible that some trip additions might occur, minimal effects are expected. The effects to the recreational sector are contingent on the sector's landings being constrained to its allowable harvest, and a management constraint, in the form of a modification to the recreational sector accountability measures (AM), which is the Preferred Alternative in Action 3.

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors is $305,424 (2024$).

5.4.3 Action 3: Modification of DWG Recreational Accountability Measures

A detailed analysis of the economic effects and impacts expected to result from this action is provided in Section 4.3.3. The following discussion analyzes the expected economic effects and impacts of the preferred alternative relative to the No Action alternative.

Commercial Sector

As this action addresses the recreational AMs for the DWG complex, no economic effects to the commercial sector are expected.

Recreational Sector

Under **Preferred Alternative 4**, for the recreational sector, if the average recreational DWG landings exceed the average recreational ACL, and the average DWG complex landings exceed the average DWG complex ACL over a three-year moving period, the Regional Administrator would reduce the duration of the recreational season by the amount projected such that the recreational ACL is not exceeded during the following fishing year unless NMFS determines based upon the best scientific information available (BSIA) that no adjustment to the recreational

[36] Landings were reported for speckled hind, yellowedge grouper, warsaw grouper, and snowy grouper. The percentage each species represented for the overall DWG recreational landings was averaged over 2018-2023, excluding 2020, and multiplied by the average recreationally landed weight of that species over 2020-2024 (M. Larkin, SERO pers. comm. 2025), and then summed to get a representative weight for a recreationally landed DWG fish.

fishing season is necessary. **Preferred Alternative 4** is therefore contingent upon the establishment of a recreational ACL through Preferred Alternative 3 in Action 2. In comparison with **Alternative 1** wherein the post-season AM is related to the projection of when the complex ACL will be reached but is hampered by the fact that IFQ system allows commercial landings year-round, **Alternative 2** is expected to be more restrictive on the recreational sector. However, so long as the complex ACL is not exceeded in a three-year moving period, the AM under **Preferred Alternative 4** would not be triggered if the recreational ACL is exceeded.

5.5 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 and program-related administrative costs to NMFS are discussed under the impacts of management measures (Section 5.4). Public costs associated with the development of this action, including Council costs of document preparation, meetings, public hearings, and information dissemination, as well as NMFS administrative costs of document preparation, meetings and review, are treated as sunk costs and excluded from this analysis per Office of Management and Budget (OMB) guidance. Council and NMFS administrative costs directly attributable to the development of this plan amendment and the rulemaking process would be incurred prior to the effective date of the final rule implementing this plan amendment.

Additionally, this analysis does not include any additional 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.

5.6 Net Benefits of the Regulatory Action

It is important to specify the time period being considered when evaluating benefits and costs. According to the Office of Management and Budget's Circular A-4,[37] "The stream of annualized estimates should begin in the year in which the final rule will begin to have effects, even if the rule does not take effect immediately.…The time frame for your analysis should cover a period long enough to encompass all the important benefits and costs likely to result from the rule." For current purposes, the reasonably "foreseeable future" is considered to be the next 3 years (2026 - 2028). The reason that this analysis uses a three-year timeframe is based on the Southeast Data, Assessment, and Review timeline for when the OFL and ABC values for yellowedge grouper will be analyzed again as part of an Operational Assessment, and on the estimated time for completion of a subsequent framework action and associated rulemaking.

Annual net economic benefits to the commercial and recreational sectors in Action 1 from the regulatory action as a whole would be expected to decrease by $1,430,024.

[37] See https://www.whitehouse.gov/wp-content/uploads/2025/08/CircularA-4.pdf

Over a three-year timeframe of 2026 - 2028, the expected change in the discounted net present value of economic benefits to both sectors would be -$4,166,332 and -$4,015,533 using a 3% discount rate and a 7% discount rate, respectively. Based on this information, this regulatory action is expected to decrease net economic benefits to the Nation.

5.7 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, territorial, 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 (E.O). Based on the information in Sections 5.4-5.5, the annual costs of this proposed action are $1,928,363 and the annual benefits are $498,339, well below the $100 million threshold. Thus, this action has been determined to not be economically significant for the purposes of E.O. 12866.

CHAPTER 6. REGULATORY FLEXIBILITY ANALYSIS

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.

6.1 Statement of the need for, objective of, and legal basis for the rule

A discussion of the reasons why action by the agency is being considered is provided in Chapter 1. In summary, there is a need to use the best scientific information available, based on the recent stock assessment, to implement measures to end current and prevent future overfishing of yellowedge grouper, and to achieve optimum yield for the species considered herein, consistent with the authority under the Magnuson-Stevens Act. The objective of this proposed regulatory action is to modify the maximum sustainable yield proxy, complex catch limits, sector allocations and catch limits, and recreational accountability measures (AM) for the Gulf of

America (Gulf) deep-water grouper (DWG) complex. The Magnuson-Stevens Act provides the statutory basis for this proposed action. All monetary estimates in the following analysis are in 2024 dollars.

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

This proposed regulatory action would revise the maximum sustainable yield (MSY) proxy and catch levels for the DWG complex based on the Gulf Council's Scientific and Statistical Committee's (SSC) recommendations. This proposed regulatory action would revise the DWG complex MSY proxy from the yield when fishing is at 30% spawning potential ratio ($F_{30\%SPR}$) to the yield when fishing is at $F_{40\%SPR}$. The proposed regulatory action would also revise the DWG complex overfishing limit (OFL) from 1.113 million pounds (mp) gutted weight (gw) to an OFL of 731,035 pounds (lb) gw and revise the DWG complex ABC from 1.105 mp gw to an ABC of 555,026 lb gw. The annual catch limit (ACL) would be revised from a DWG complex ACL of 1.105 mp gw to a new complex ACL that is set equal to the new complex ABC, which is 555,026 lb gw. This proposed regulatory action would also revise the DWG complex ACL from previously having an unspecified recreational sector allocation, to a new recreational sector allocation based on the average recreational landings from the most recent 5 years (2019 - 2023). This would establish a new recreational ACL of 56,668 lb gw, or approximately 10.21% of the complex ACL. To account for the new recreational ACL, this proposed regulatory action also revises the commercial sector's allocation from 96.50% of the DWG complex ACL (based on landings during 2001-2004), to approximately 89.79% of the complex ACL, or 498,358 lb gw. The proposed regulatory action also revises the commercial quota from 1.024 million lb gw to 478,424 lb gw, which is equal to the proposed commercial sector's ACL reduced by 4%.

This proposed regulatory action would also revise the DWG complex recreational AMs. Currently, these AMs are triggered if the stock complex ACL is exceeded in a fishing year. Under the proposed action, these AMs would be triggered if the average recreational DWG landings exceed the average recreational ACL, and the average DWG complex landings exceed the average DWG complex ACL over a three-year moving period. The proposed regulatory action also revises the DWG complex AMs from prescribing that the Regional Administrator (RA) close the recreational sector for the remainder of the fishing year if the sum of commercial and recreational landings reaches or is projected to reach the stock complex ACL, to prescribing that the RA reduce the duration of the recreational fishing season to ensure the recreational ACL is not exceeded during the subsequent fishing year unless the National Marine Fisheries Service (NMFS) determines based upon the best scientific information available (BSIA) that no adjustment to the recreational fishing season is necessary.

The proposed changes to the DWG complex's MSY proxy, OFL, ABC, and ACL, as well as sector allocations and sector ACLs would apply to DWG individual fishing quota (IFQ) - shareholders, as well as commercial fishing businesses, for-hire fishing businesses, and recreational anglers that fish for DWG species in federal waters of the Gulf. The proposed changes to the DWG recreational AMs would only apply to recreational anglers and for-hire fishing businesses that fish for DWG species in federal waters of the Gulf.

The RFA requires NMFS to describe the impact of the proposed rule on small entities (5 U.S.C. 603). Small entities include small businesses, small organizations, and small governmental jurisdictions (5 U.S.C. 601(3)-(6)). Recreational anglers are not businesses, organizations, or governmental jurisdictions, so they are outside the scope of this analysis.

Although this proposed regulatory action would apply to for-hire vessels, it would not be expected to have any direct effects on these entities. From 2019-2023, there were an average of 60 target trips by charter mode for DWG in the Gulf, which accounts for just over 2.5% of all recreational target trips for DWG in the Gulf. In contrast, an average of 6,244 catch trips by charter mode for DWG in the Gulf were made from 2019-2023. This indicates that DWG fish are incidentally harvested species and charter vessels do not sell targeted trips for these fish. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a wide range of species to be caught. Gulf headboats typically do not sell targeted trips specifically for DWG species. Therefore, the National Marine Fisheries Service (NMFS) does not expect the proposed changes to the DWG complex management measures to directly alter the services sold by these vessels. Any change in demand for these fishing services, and associated economic effects, as a result of this proposed action would be a consequence of a change in anglers' behavior, secondary to any direct effect on anglers and, therefore, an indirect effect of the proposed action. This indirect effect would fall outside the scope of the RFA. In summary, only the impacts on commercial fishing businesses will be discussed.

As of July 8, 2021, there were 825 limited access valid or renewable reef fish permits. In order to commercially harvest species in the DWG complex, a vessel permit must also be linked to an IFQ account and possess sufficient allocation for this species. IFQ accounts can be opened, and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive DWG allocation from other IFQ participants. On average from 2019 through 2023, there were 451 IFQ accounts that held DWG allocation and 70% of those held DWG shares. During the same period, there were 145 federally permitted commercial vessels, on average each year, with reported landings of DWG species in the Gulf. Their average annual vessel-level gross revenue from all species for 2019 through 2023 was approximately $346,490 and Gulf DWG landings accounted for approximately 10% of this revenue. From 2019 through 2023, the maximum annual revenue from all species reported by a single one of the commercial vessels that landed Gulf DWG species was approximately $4.56 million in 2023. Economic profits for these commercial vessels are estimated to be 39.9% of their annual gross revenue, on average, or $138,250 per vessel during this period. Although many fishing businesses only own one permitted vessel, some hold or own multiple permits and vessels. Since comprehensive ownership data are currently unavailable for vessels harvesting Gulf DWG species, this analysis assumes that each of the 145 vessels is independently owned by a single business. This assumption is expected to result in an overestimate of the actual number of businesses directly regulated by this proposed action. Additionally, 261 IFQ shareholder accounts, on average from 2020 through 2024, possessed DWG shares but did not report any landings of DWG species. They either transferred DWG allocation only or were inactive. It is assumed that each of these accounts is independently owned by a single business as well. Revenue and cost data are not collected directly from Gulf IFQ shareholders; therefore, estimates of economic profits for the Gulf DWG IFQ commercial fishing businesses that did not report landings are unavailable.

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 the NMFS size standard. No other small entities that would be directly affected by this proposed action have been identified.

6.3 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 requirement and the type of professional skills necessary for the preparation of the report or records

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

6.4 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed rule

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

6.5 Significance of economic impacts on a substantial number of small entities

Substantial number criterion

If implemented, this proposed regulatory action is expected to directly affect 145 of the 825 vessels with commercial Gulf reef fish permits, or approximately 18% of those commercial fishing businesses. In addition, this proposed action is expected to affect 261 IFQ shareholders that hold DWG shares but that do not fish them, for a total of 406 affected commercial fishing businesses. All regulated commercial fishing businesses have been determined, for the purpose of this analysis, to be small entities. Based on this information, the proposed action is expected to affect a substantial number of small businesses.

Significant economic effects

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 directly regulated by this proposed action have been determined to be small entities. 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?

A detailed analysis of the economic effects associated with this proposed regulatory action can be found in Chapter 4. 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 MSY proxy and the OFL for the DWG complex; however, these proposed changes would not directly constrain harvest or fishing effort, therefore, would not have a direct economic impact on DWG commercial fishing entities. Thus, the proposed action would modify the MSY proxy and the OFL for the DWG complex is outside the scope of the RFA.

This proposed action would also reduce the DWG complex ABC to 555,026 lb gw and set the complex ACL equal to it. Under the status quo commercial sector allocation of 96.50%, the proposed stock complex ACL would result in a commercial ACL of 535,600 lb gw and a commercial quota, as reduced 4% from the commercial ACL, of 514,176 lb gw. Relative to average historical landings from 2018 - 2023, excluding 2020 of 746,230 lb gw, this would result in an estimated reduction in landings of 232,054 lb gw per year. As discussed below, this proposed action would also modify commercial and recreational allocation percentages and sector ACLs, and therefore, economic effects to small entities are quantified as part of that discussion.

This proposed action would establish a recreational sector allocation of 10.21% and a recreational ACL of 56,668 lb gw and revise the commercial sector allocation from 96.50% to approximately 89.7%. This would result in a commercial ACL of 498,358 lb gw and a commercial quota, as reduced 4% from the commercial ACL, of 478,424 lb gw. Relative to average historical landings from 2018 - 2023, excluding 2020, this would result in an estimated reduction in commercial landings of 267,806 lb gw per year. NMFS anticipates that if the overall supply of DWG commercial landings decreases, the average price per lb gw would increase from the status quo average price of $6.66 per lb gw to $7.61 per lb gw. This is based on an uncompensated own-price flexibility for "GOM Other Grouper," inclusive of DWG species, of -0.396. The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold. Using the adjusted average price estimate of $7.61 and assuming the proposed quota would be harvested in full, annual ex-vessel revenue would be $3,639,128, which represents a $1,330,762 reduction relative to the status quo. The average vessel would experience a decrease of $9,178 in ex-vessel revenue and $3,662 in economic profits (approximately 3% of average annual ex-vessel revenue and economic profits). The

average-per-vessel estimates are calculated by dividing by the average number of vessels with reported landings of DWG species from 2019 through 2023.

The proposed regulatory action may affect prices for DWG IFQ shares and allocation because it would make the fixed supply of DWG IFQ allocation scarcer. While these price changes can't be quantified with current data, allocation transfer prices might increase. This would raise costs for some commercial fishing businesses that harvest DWG species or scamp under the allowable flexibility measures of Amendment 29. If we assume the demand for DWG allocation is elastic (meaning a change in quantity demanded is highly responsive to price changes), DWG IFQ shareholders would see a decrease in total revenue if DWG shares and allocation prices increase, and an increase in total revenue if they decrease. With respect to IFQ share value, if prospective buyers believe that a new ACL will result in lower future earnings from IFQ shares, then share prices would be expected to decrease. Otherwise, share values will stay the same or increase.

6.6 Description of significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities

One alternative, the no action alternative, was considered for the proposed action to modify the DWG complex ABC and ACL. This alternative would have retained the current ABC and complex ACL, both of which are equal to 1.105 mp gw. These catch limits are based on the stock assessment results of SEDAR 22 for yellowedge grouper and Tier 3b of the ABC Control Rule for the other three species, which used recreational landings data from the Marine Recreational Fisheries Statistics Survey (MRFSS). NMFS ceased using MRFSS to estimate recreational landings in the year 2013. Because this alternative would maintain the status quo catch limits for the DWG complex, no direct economic effects would be expected. This alternative was not selected by the Gulf Council because the catch limits under the no action alternative would exceed those currently recommended by the SSC, they are no longer consistent with the best scientific information available, and MRFSS is no longer being used to estimate recreational landings.

Three alternatives were considered for the proposed action to modify the DWG complex sector ACLs and sector allocations. The first alternative, the no action alternative, would retain the commercial sector allocation of 96.50% or 535,600 lb gw, as based on landings during 2001 - 2004, and the recreational sector's ACL would remain unspecified. The commercial quota would be set equal to the commercial ACL reduced by 4% or 514,176 lb gw. Relative to the proposed commercial ACL and quota, the second alternative, with its higher commercial catch limits, would be expected to result in a reduction in annual ex-vessel revenue that is $206,978 less. This alternative was not selected by the Gulf Council because the recreational landings used to establish the status quo commercial sector allocation were based on recreational data from MRFSS, which do not account for the actual recreational removals that are present in both the MRIP-FES recreational data and the SEDAR 85 stock assessment. In addition, this alternative would not specify a recreational ACL, which is necessary to implement an effective accountability measure.

The second alternative would establish a recreational ACL and sector allocation based on the average recreational landings used in the Generic ACL/AM Amendment (2001 - 2004). This would result in a recreational ACL of 19,426 lb gw, with a recreational sector allocation of 3.50%. The second alternative would continue to allocate 96.50% of the complex ACL, or 535,600 lb gw, to the commercial sector. The commercial quota would be set equal to the commercial ACL reduced by 4% or 514,176 lb gw. The recreational and commercial ACLs would sum to equal the DWG complex ACL. Relative to the proposed commercial ACL and quota, the second alternative, with its higher commercial catch limits, would be expected to result in a reduction in annual ex-vessel revenue that is $206,978 less. Similar to the no action alternative, this alternative was not selected by the Gulf Council because the recreational landings used to establish the sector allocations would be based on recreational data from MRFSS, which do not account for the recreational removals that are present in both the MRIP-FES recreational data and the SEDAR 85 stock assessment.

The third alternative would establish a recreational ACL and sector allocation based on an equal reduction in the landings from the recreational and commercial sectors from the most recent five years (2019 - 2023), such that the resulting sector ACLs do not exceed the complex ACL. This would result in a recreational ACL of 37,964 lb gw, with a recreational sector allocation of 6.84%. The third alternative would allocate 93.16% of the complex ACL, or 517,062 lb gw, to the commercial sector. The commercial quota would be set equal to the commercial ACL reduced by 4% or 496,380 lb gw. The recreational and commercial ACLs would sum to equal the DWG complex ACL. Relative to the proposed commercial ACL and quota, the third alternative, with its higher commercial catch limits, would be expected to result in a reduction in annual ex-vessel revenue that is $105,081 less. This alternative was not selected by the Gulf Council because the smaller recreational ACL relative to the proposed regulatory action would be more likely to be exceeded. Over the last 10 years (2014 – 2023), recreational landings would have exceeded the third alternative's recreational ACL seven times.

CHAPTER 7. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED

1. National Marine Fisheries Service:
   - Southeast Fisheries Science Center
   - Southeast Regional Office
     i. Protected Resources
     ii. Habitat Conservation
     iii. Sustainable Fisheries

2. NOAA General Counsel
3. U.S. Coast Guard
4. Alabama Department of Conservation and Natural Resources/Marine Resources Division
5. Florida Fish and Wildlife Conservation Commission
6. Louisiana Department of Wildlife and Fisheries
7. Mississippi Department of Marine Resources
8. Texas Parks and Wildlife Department

CHAPTER 8. LIST OF PREPARERS

PREPARERS

Name	Expertise	Responsibility	Agency
Ryan Rindone	Fishery Biologist	Co-Lead – Amendment development, physical, biological, ecological, social, and administrative analyses	Gulf Council
Dan Luers	Fishery Biologist	Co-Lead – Amendment development, physical, biological, ecological, and administrative analyses	SERO
Matt Freeman	Economist	Economic analyses	Gulf Council
David Records	Economist	Economic analyses	SERO
Adam Stemle	Economist	Economic analyses	SERO
Max Birdsong	Anthropologist	Social analyses	Gulf Council
Christina Package-Ward	Anthropologist	Social analyses	SERO
Alisha Gray	Fishery Biologist	Data analyses	SERO

REVIEWERS

Name	Expertise	Responsibility	Agency
Mara Levy	Attorney	Legal review	NOAA GC
Scott Sandorf	Technical writer and editor	Regulatory writer	SERO
Skyler Sagarese	Research Ecologist	Review	SEFSC
Jennifer Lee	Protected Resources	Review	SERO
Noah Silverman	NEPA Analyst	Review	SERO
Jessica Stephen	Limited Access Privilege Programs	Review	SERO
Frank Helies	Fishery Biologist	Review	SERO
John Froeschke	Fishery Biologist	Review	Gulf Council
Carrie Simmons	Fishery Biologist	Review	Gulf 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

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APPENDIX A: CONSIDERED BUT REJECTED APPENDIX

November 2024 Council Meeting

Action 2: Modification of Deep-Water Grouper Sector ACLs and Sector Allocations

Alternative 4: The complex ACL is set equal to the complex ABC. Establish a recreational ACL and sector allocation based on the average of the highest (2014) and lowest (2000) annual recorded recreational landings from 2000 – 2023 (see Table 1.1.2.). This results in a recreational ACL of 83,809 lb gw, or 15.10% of the complex ACL. The commercial sector is allocated 84.90% of the complex ACL, or 471,217 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 452,368 lb gw. The recreational and commercial ACLs sum to equal the DWG complex ACL. These values are shown in the table below in lb gw.

Complex	Year	OFL	ABC (Complex ACL)	Comm ACL	Comm Quota	Rec ACL
DWG	2025-2029+	731,035	555,026	471,217	452,368	83,809

Council Rationale:

The Council evaluated Alternative 4 in Action 2 and expressed concern with using a data point as old as one from 2000 and providing such considerable weight to it (50%) in determining a sector allocation strategy for deep-water grouper (DWG). Given this concern, and the availability of other alternatives for consideration, the Council decided to remove Alternative 4 of Action 2 to the Considered but Rejected Appendix.

January 2025 Council Meeting

Alternative 5: The complex ACL is set equal to the complex ABC. Establish a recreational ACL and sector allocation based on the average landings from the recreational and commercial sectors from 2001 – 2004 (see Table 1.1.2). This results in a recreational ACL of 31,026 lb gw, or 5.59% of the complex ACL. The commercial sector is allocated 94.41% of the complex ACL, or 524,000 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 503,040 lb gw. The recreational and commercial ACLs sum to equal the DWG complex ACL. These values are shown in the table below in lb gw.

Complex	Year	OFL	ABC (Complex ACL)	Comm ACL	Comm Quota	Rec ACL
DWG	2025-2029+	731,035	555,026	524,000	503,040	31,026

Alternative 6: The complex ACL is set equal to the complex ABC. Establish a recreational ACL and sector allocation based on the average landings from the recreational and commercial sectors from 2000 – 2023 (see Table 1.1.2). This results in a recreational ACL of 32,747 lb gw, or approximately 5.90% of the complex ACL. The commercial sector is allocated approximately 94.10% of the complex ACL, or 522,279 lb gw. The commercial quota is reduced from the commercial ACL by 4% and is set at 501,388 lb gw. The recreational and commercial ACLs sum to equal the DWG complex ACL. These values are shown in the table below in lb gw.

Complex	Year	OFL	ABC (Complex ACL)	Comm ACL	Comm Quota	Rec ACL
DWG	2025-2029+	731,035	555,026	522,279	501,388	32,747

Council Rationale:

The Council evaluated Alternatives 5 and 6 in Action 2 and expressed concern with using data from a time when the commercial individual fishing quota (IFQ) program was not in existence, especially given that the IFQ program is expected to continue in the future. Given this concern, and the availability of other alternatives for consideration, the Council decided to remove Alternatives 5 and 6 of Action 2 to the Considered but Rejected Appendix.

Action 3: Modification of Deep-Water Grouper Recreational Accountability Measures

Alternative 3: Establish in-season recreational AMs for the DWG complex. For the recreational sector, if the recreational ACL is projected to be met in a fishing year, then the Regional Administrator would close the recreational sector for the DWG complex for the remainder of that fishing year.

Council Rationale:

The Council evaluated Alternative 3 in Action 3 and expressed concern with using an in-season accountability measure for a complex composed of rare-event species with low levels of landings through the Marine Recreational Information Program's Fishing Effort Survey. Landings estimates from MRIP-FES in this circumstance can be very imprecise and sporadic, complicating in-season quota monitoring. Given this data precision

concern, and the availability of other alternatives for consideration, the Council decided to remove Alternative 3 in Action 3 to the Considered but Rejected Appendix.

Alternative 4: Revise the post-season recreational AMs for the DWG complex. For the recreational sector, if recreational landings exceed the recreational ACL in two consecutive years out of the previous three fishing years, then in the following fishing year the Regional Administrator would close the recreational sector for the DWG complex for the remainder of that fishing year when the recreational ACL is projected to be met.

Council Rationale:

The Council evaluated Alternative 4 in Action 3 and was informed by NOAA General Counsel that, since Alternative 4 did not require any action by the Council for at least two years, it was not compliant with the requirement in National Standard 1 for annual quota monitoring. Given this concern, the Council decided to remove Alternative 4 in Action 3 to the Considered but Rejected Appendix.

APPENDIX B: RECREATIONAL AND COMMERCIAL SEASON DURATION ANALYSES

Recreational and Commercial Season Analyses for the Gulf of America Deep-Water Grouper Complex
Southeast Regional Office
LAPP/DM Branch
March 5, 2025

The Gulf of America (Gulf) deep-water grouper (DWG) complex consists of snowy grouper, speckled hind, warsaw grouper and yellowedge grouper. These species are currently managed as a complex in federal waters under the Fishery Management Plan for the Reef Fish Resources of the Gulf (Reef Fish FMP). In 2025, an amendment to the Reef Fish FMP would establish annual catch limits (ACLs) and sector allocations in pounds (lb) gutted weight (gw) for the commercial and recreational sectors using updated data from the Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES). This analysis provides the average commercial landings and how much that represents of each proposed commercial IFQ quota option, and separately projects recreational fishing season closures based on all management options currently being considered.

Commercial and recreational landings data
Monthly commercial landings were obtained for the DWG species from the National Marine Fisheries Service (NMFS) Catch Share Database (January 2025; **Table B.1**). Gulf recreational landings for the DWG complex were obtained from the Southeast Fisheries Science Center (SEFSC) recreational ACL files (accessed December 2024; **Table B.2**). The SEFSC recreational landings dataset includes landings from the Texas Parks and Wildlife recreational creel survey (TPWD), Louisiana Department of Wildlife and Fisheries creel survey (LA Creel), Southeast Region Headboat Survey (SRHS), and the Marine Recreational Information Program (MRIP; Florida, Alabama and Mississippi). The MRIP file contains estimates from MRIP's Access Point Angler Intercept Survey (APAIS), MRIP FES (private angler effort estimates), and For-Hire Telephone Survey (FHS; for-hire effort estimates). For 2020 and 2021, imputed MRIP FES catch estimates are used to account for disruptions in the dockside sampling due to COVID. Monthly landings were estimated for MRIP FES, TPWD and LA Creel by assuming equal daily catch rates for months within a wave and then combined with SRHS, which are provided monthly. Predicted future landings for both the commercial and recreational sector were estimated by averaging monthly landings in 2021-2023. The average monthly landings were then divided by the number of days in each month to provide a daily catch rate for each sector.

Commercial Gulf DWG species are currently managed in a catch share program, and therefore, any reductions in the commercial quota will result in fewer pounds being distributed to each participant who holds shares in the program rather than the fishery experiencing closures. Average commercial landings of DWG species are calculated to project future landing rates and are provided to compare against each of the proposed IFQ quotas (**Table B.3**). Separately, the recreational sector will be closed if the ACL is met or is projected to be met. Predicted

recreational closure dates are provided in **Table B.4** based on cumulatively summed projected recreational landings of DWG species.

Table B.1. Commercial landings (lb gw) of Gulf DWG species by wave from 2021-2023 and projected future landings using averaged landings from 2021-2023

Year	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total Landings
2021	76,798	130,864	179,696	192,354	91,474	129,241	800,427
2022	54,690	92,873	102,511	143,481	74,892	91,461	559,908
2023	67,071	118,301	129,143	165,349	71,862	49,907	601,633
3yr Avg Projected Landings	66,186	114,013	137,117	167,061	79,409	90,203	653,989

Source: SEFSC Commercial ACL dataset [January 2025].
Note: Commercial landings include all Gulf DWG species.

Table B.2. Monthly recreational landings (lb gw) of Gulf DWG species from 2021-2023 and projected future landings using averaged landings from 2021-2023.

Year	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total Landings
2021	6,269	3,973	3,680	9,862	4,976	943	29,701
2022	1,071	2,473	12,261	6,761	15,903	408	38,877
2023	562	2,009	46,390	12,597	6,094	953	68,582
3yr Avg Projected Landings	2,634	2,818	20,777	9,740	8,937	767	45,672

Source: SEFSC MRIP FES recreational ACL database [December 2024].
Note: Recreational landings include all Gulf DWG species (TPWD, SRHS, LA Creel, MRIP FES).

Table B.3. Average commercial landings of the Gulf DWG commercial sector compared against each proposed IFQ Quota alternative.

Alternatives	Proposed Commercial ACL (lb gw)	Proposed IFQ Quota (lb gw)	Average Commercial Landings	% Average Landings compared against Proposed IFQ Quota
Alternative 1: No Action	535,600	514,176	653,989	127%
Alternative 2	535,600	514,176	653,989	127%
Alternative 3	498,358	478,424	653,989	137%
Alternative 4	517,062	496,380	653,989	132%

Source: NMFS Catch Share Database (January 2025).

Table B.4. Projected Gulf DWG closure dates expected for the recreational sector with each proposed ACL alternative.

Alternatives	Proposed Recreational ACL (lb gw)	3-year Average (2021-2023)	Upper 95% 3-year Average (2021-2023)
Alternative 1: No Action	undefined	**Jun 10**	**May 12**
Alternative 2	19,426	**Jun 10**	**May 12**
Alternative 3	56,668	No Closure	**Jul 1**
Alternative 4	37,964	**Sep 14**	**Jun 5**

Source: SEFSC MRIP FES Recreational ACL Dataset (December 2024).

The reliability of these results is dependent upon the accuracy of the underlying data and input assumptions. The analysis intends to create a realistic baseline as a foundation for comparisons, under the assumption that projected future landings will accurately reflect actual future landings. These closure dates are our best estimate, but uncertainty still exists as economic conditions, weather events, changes in catch-per-unit effort, fisher response to management regulations, and a variety of other factors may cause departures from any assumption.

APPENDIX C: BYCATCH PRACTICABILITY ANALYSIS

Background/Overview

National Standard 9 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that conservation and management measures, to the extent practicable, minimize bycatch, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. Bycatch is defined as fish harvested in a fishery, but not sold or retained for personal use. This definition includes both economic and regulatory discards. Economic discards are generally undesirable from a market perspective because of their species, size, sex, and/or other characteristics. Regulatory discards are fish required by regulation to be discarded (e.g., minimum size limit, bag limit).

The National Standard 9 Guidelines, 50 CFR 600.350(d)(3), identify ten factors to consider in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable. These are:

1. Population effects for the bycatch species.
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
4. Effects on marine mammals and birds.
5. Changes in fishing, processing, disposal, and marketing costs.
6. Changes in fishing practices and behavior of fishermen.
7. Changes in research, administration, and enforcement costs and management effectiveness.
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources.
9. Changes in the distribution of benefits and costs.
10. Social effects.

The Fishery Management Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization (FAO) of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

Bycatch and bycatch mortality can negatively affect a stock by reducing the number of fish that survive and become susceptible to harvest. Fishery management regulations are intended to constrain effort and control fishing mortality, but in some cases increase bycatch or bycatch mortality. When proposing fishing regulations, managers must balance the competing objectives of optimizing yield, ending overfishing, and reducing bycatch to the extent practicable. In addition, optimizing yield requires accounting for the different characteristics of the commercial and recreational sectors. See 16 U.S.C. § 1802(33) (defining optimum, in pertinent part, as "the amount of fish" that "will provide the greatest overall benefit to the Nation, particularly with

respect to food production and recreational opportunities."); 16 U.S.C. § 1801(a)(13) ("While both provide significant cultural and economic benefits to the Nation, recreational fishing and commercial fishing are different activities. Therefore, science-based conservation and management approaches should be adapted to the characteristics of each sector."). Participants in the commercial sector tend to seek to maximize harvest and efficiency while participants in the recreational sector tend to seek to maximize access and opportunities. These different objectives affect fishing behavior, which generally results in more discards by the recreational sector. However, both sectors provide important benefits to the Nation, see 50 C.F.R. § 600.310(e)(3)(iii)(A)(1) and (2), and NMFS must consider and account for these differences when assessing the practicability of measures that minimize bycatch and bycatch morality.

This amendment would modify the status determination criteria for the deep-water grouper (DWG) complex, implement reduced catch levels necessary to end overfishing of the yellowedge grouper stock, set allocations of DWG between the commercial and recreational sectors using recreational data based on the Marine Recreational Information Program – Fishing Effort Survey (MRIP-FES), and modify the DWG recreational accountability measures (AM). The harvest of the Gulf of America (Gulf) DWG is regulated with bag limits and quotas. These measures are generally effective in limiting fishing mortality and DWG species discards. In addition, especially in the recreational sector, catch and effort are inherently limited due to the greater distance from shore from which DWG are generally found, and thus the larger and more expensive fishing vessels and gear necessary to harvest DWG. However, in spite of these limitations, recreational harvest has increased in recent years. Due to the depth at which DWG are captured, the species often experience extreme barotrauma during retrieval, resulting in very low survival if released. However, because there are no minimum size limits for DWG and because annual catch limits have not been reached since implementation of the individual fishing quota (IFQ) program in 2009, bycatch and discards of DWG species are estimated to be low. However, implementation of DWG complex catch limits proposed in this amendment, which are below recent harvest totals, are expected to result in recreational seasonal closures and reduced commercial allocation and thus may also result in regulatory discards of DWG species. This section outlines the amount and type of bycatch and discards experienced in the DWG portion of the reef fish fishery.

Commercial Sector

Commercial Discard Rates

DWG species overlap with several other commonly targeted and caught reef fish species (Figure C1). It should be noted that especially in the case of DWG, it appears more likely that certain species known to swim above the ocean bottom (e.g., red snapper, greater amberjack, vermilion snapper) are captured while targeting DWG species, but not vice versa. Because fishing effort is focused above the reef (and commonly at shallower locations), DWG species are not likely to be captured while targeting those species. Commercial discard rates are based on data from the Southeast Fisheries Science Center's (SEFSC) Reef Fish Observer Program (RFOP) from the inception of the Grouper-Tilefish IFQ program from 2010-2017, as compiled and analyzed by Pulver and Stephen (2019) (Table C1). These analyses employed logistic models that were constructed using data from RFOP and analyzing factors including fish length, available

allocation, gear type, calendar year quarter, and year to deduce the reasons for discarding. The results from RFOP models in conjunction with self-reported discard information from the SEFSC Supplemental Discard Logbook program determined that discarding due to fish length selection, not related to a minimum size limit, is occurring for speckled hind (*Epinephelus drummondhayi*), yellowedge grouper (*Epinephelus flavolimbatus*), and snowy grouper (*Hyporthodus niveatus*). Based on the results of the study, potential changes to the Grouper-Tilefish IFQ program such as additional flexibility measures were identified as potential management strategies for decreasing discards.

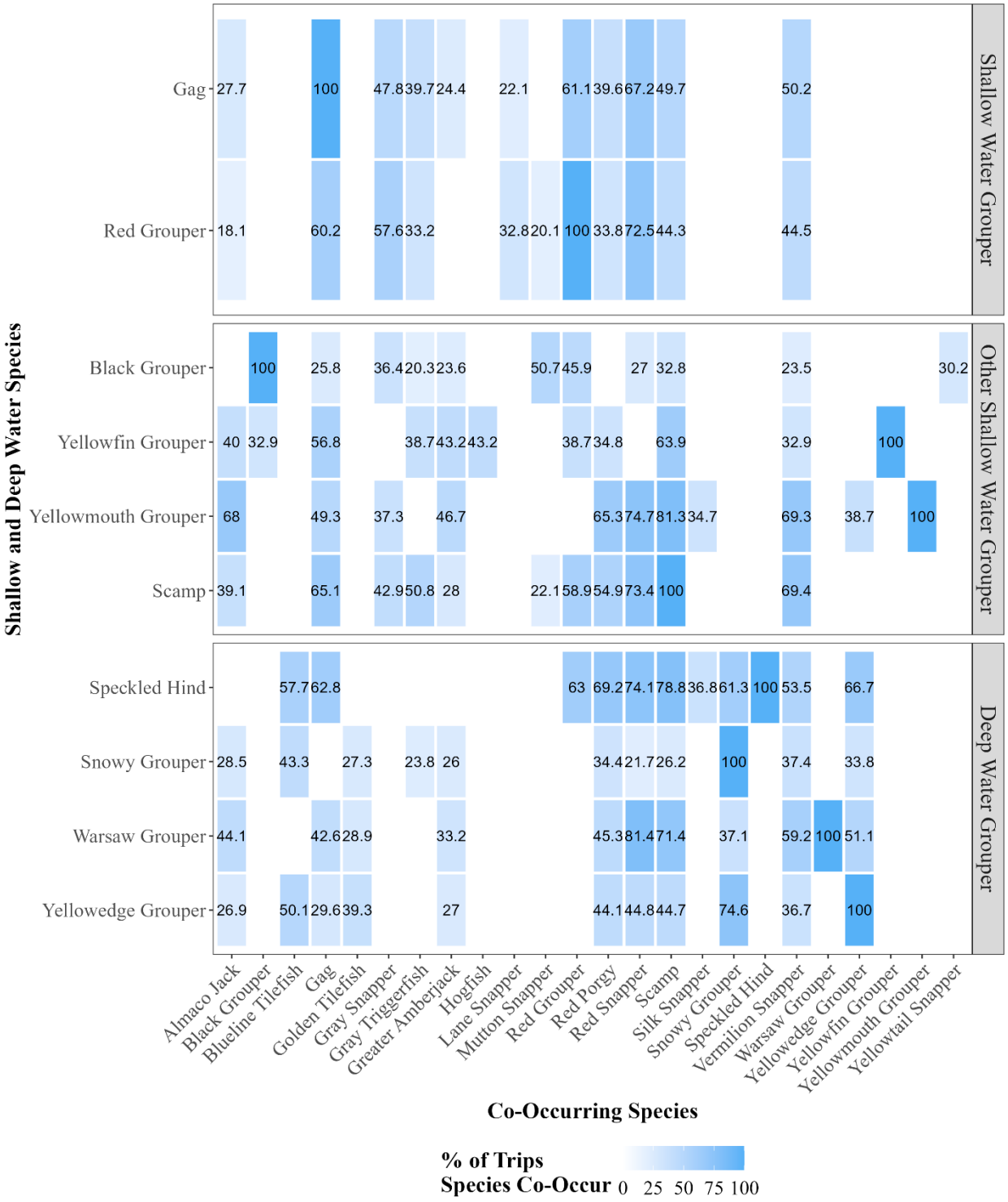

Figure C1. Top 10 species that co-occur with shallow and deep-water grouper species caught by the commercial sector in the Gulf, by species family. Darker colors represent higher percentage of co-occurrence on commercial fishing trips.

Table C1. The number of captures and percentage for each disposition observed by the RFOP from 2010 through 2017 DWG species.

DWG Species	Number Observed	Kept	Discarded
Yellowedge Grouper	29,503	98.70%	1.30%
Snowy Grouper	4,804	98.10%	1.90%
Speckled Hind	2,000	74.10%	25.90%
Warsaw Grouper	280	97.90%	2.10%

DWG discard rates utilized in the Southeast Data, Assessment and Review (SEDAR) 85 (2023) yellowedge grouper stock assessment were estimated for the Gulf vertical line and bottom longline portions of the fishery (reef fish and shark longline gear) using catch-per-unit-effort (CPUE) from the RFOP and total fishing effort from the commercial reef fish logbook program to estimate total catch (Atkinson et al., 2023). For discard estimation, CPUE is computed for total discards, including fish released alive, released dead, released in unknown condition, and used for bait. Figure C2 provides the estimates of yellowedge grouper commercial and recreational catch and discards used in SEDAR 85 (2023) by year and gear type in weight and shows the rising influence of the recreational sector in harvest of yellowedge grouper (and likely other DWG species) in recent years. Overall, discards in weight by the longline fishery accounted for less than 1% of the total catch (kept + discards) between 1993 and 2021 (Figure C3). Discards in the vertical line fishery were considered negligible, as only 7 observer trips between 2007 and 2021 reported discarding of a yellowedge grouper (SEDAR 85 2023). Table C2 provides the reason for discards (self-reported) for DWG and other species. Note that although there is no minimum size or closed season for any DWG species, these are reported as reasons for some DWG discards.

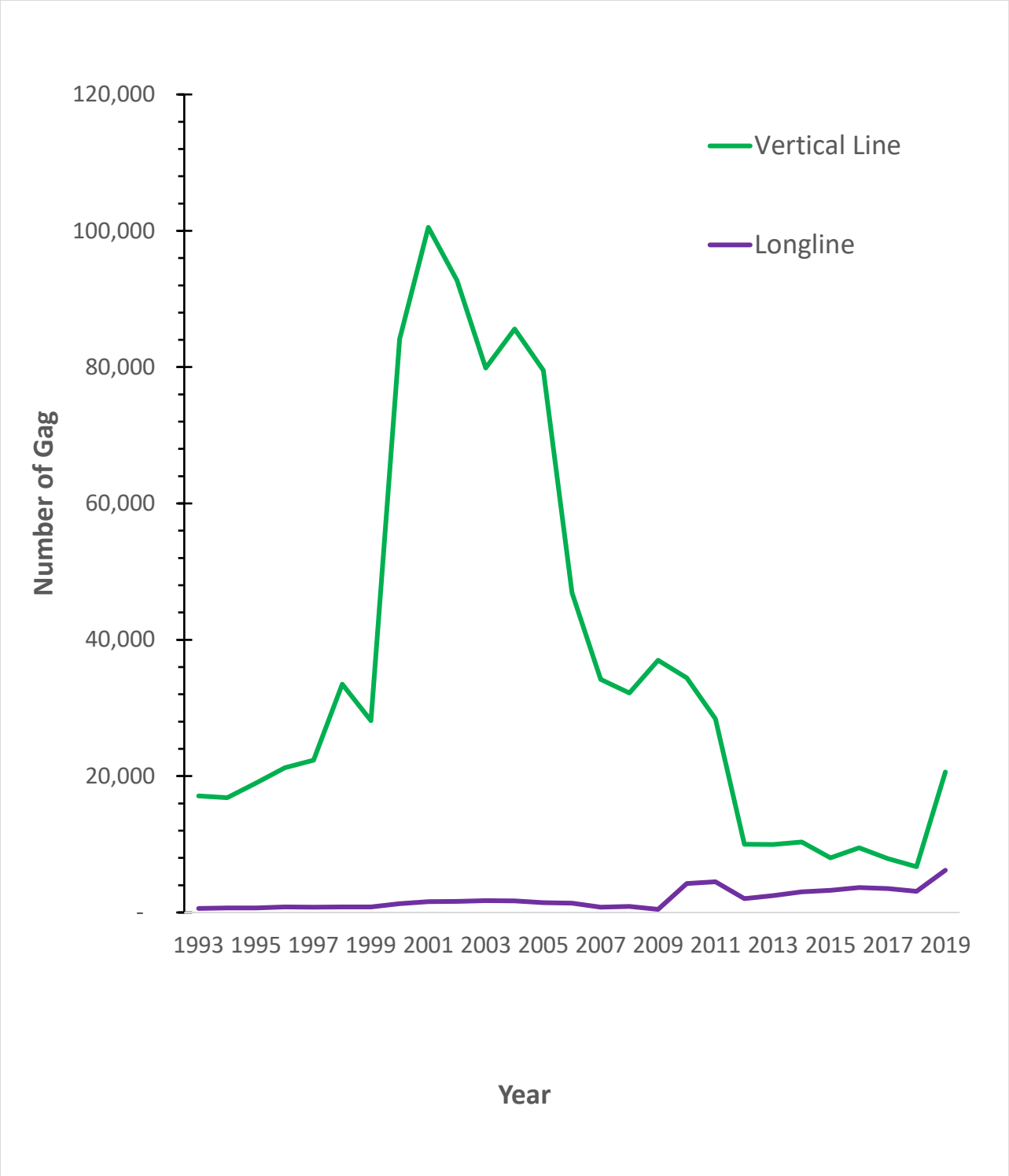

Figure C2. Percent composition and comparison of commercial and recreational landings and dead discards for Gulf yellowedge grouper.

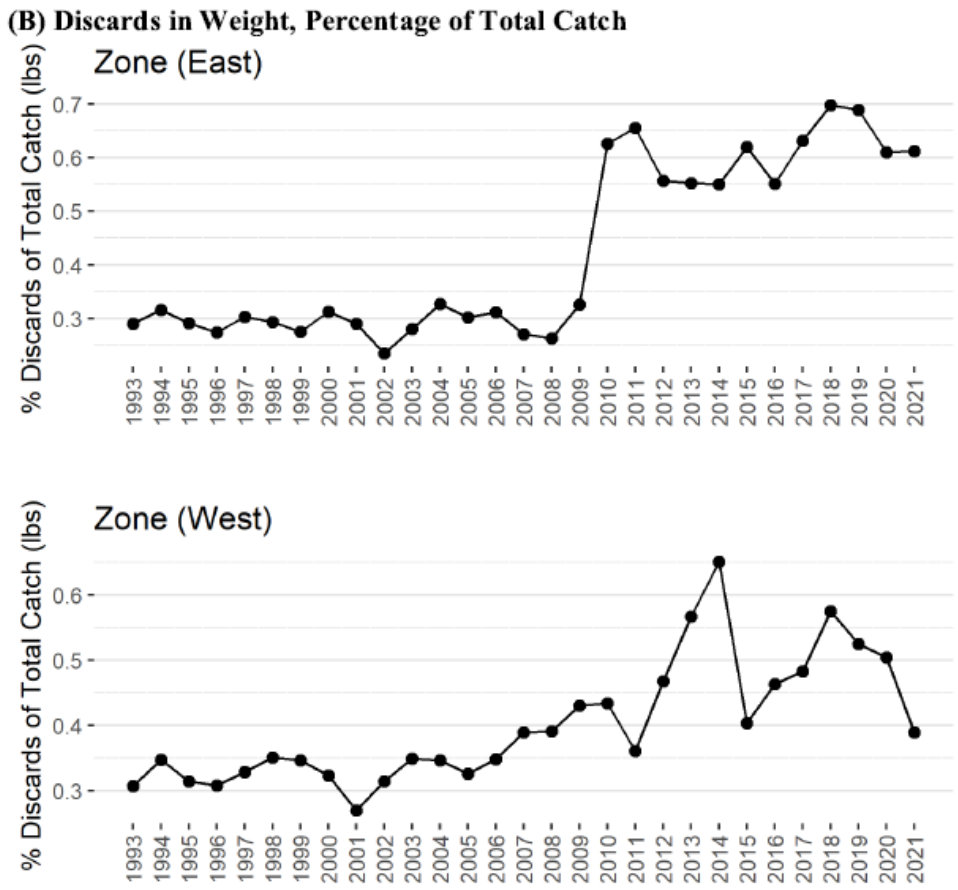

Figure C3. Observer CPUE expansion estimates of Gulf yellowedge grouper bottom longline annual discards (+/-SE) in weight expressed as percentage of total catch (kept + discards) for 2007 - 2021. (Atkinson et al., 2023).

Table C2. The number of discards, number of trips reporting discards, and percentage of discards for each discard reason out of the total number for DWG species and Grouper-Tilefish IFQ species frequently captured with DWG as reported to the SEFSC Supplemental Discard Logbook from 2010 through 2017.

IFQ Species	Number Reported	Number of Trips	Not Legal Size	Out of Season	Other Regulation	Market Conditions
Red Grouper	458,928	4,986	94.72%	0.10%	4.50%	0.69%
Gag	37,062	2,499	55.97%	2.06%	40.73%	1.24%
Scamp	4,077	582	65.49%	0.29%	33.80%	0.42%
Snowy Grouper	512	18	67.77%	0.00%	12.70%	19.53%
Speckled Hind	234	18	16.67%	0.85%	53.85%	28.63%
Warsaw Grouper	18	10	27.78%	0.00%	61.11%	11.11%
Yellowedge Grouper	1,066	42	45.87%	0.00%	20.36%	33.77%
Blueline Tilefish	8,999	57	0.21%	0.32%	22.78%	76.69%
Golden Tilefish	2,725	37	50.46%	0.00%	20.11%	29.43%

Gear Type

Discard estimation was analyzed for the two predominant gear types in the DWG component of the reef fish fishery - vertical line and bottom longline. Pulver and Stephen (2019) found that among the factors that influenced discarding of DWG and other Grouper-Tilefish IFQ species, gear type had the lowest relative influence on discards (Figure C4). The highest relative influence of gear type for a DWG species was about 10% for snowy grouper, and no other species exceeded 5%. This indicates that gear type was not a driving factor in discards, although the authors noted that discards from longline gear were more prevalent than were discards from vertical line gear.

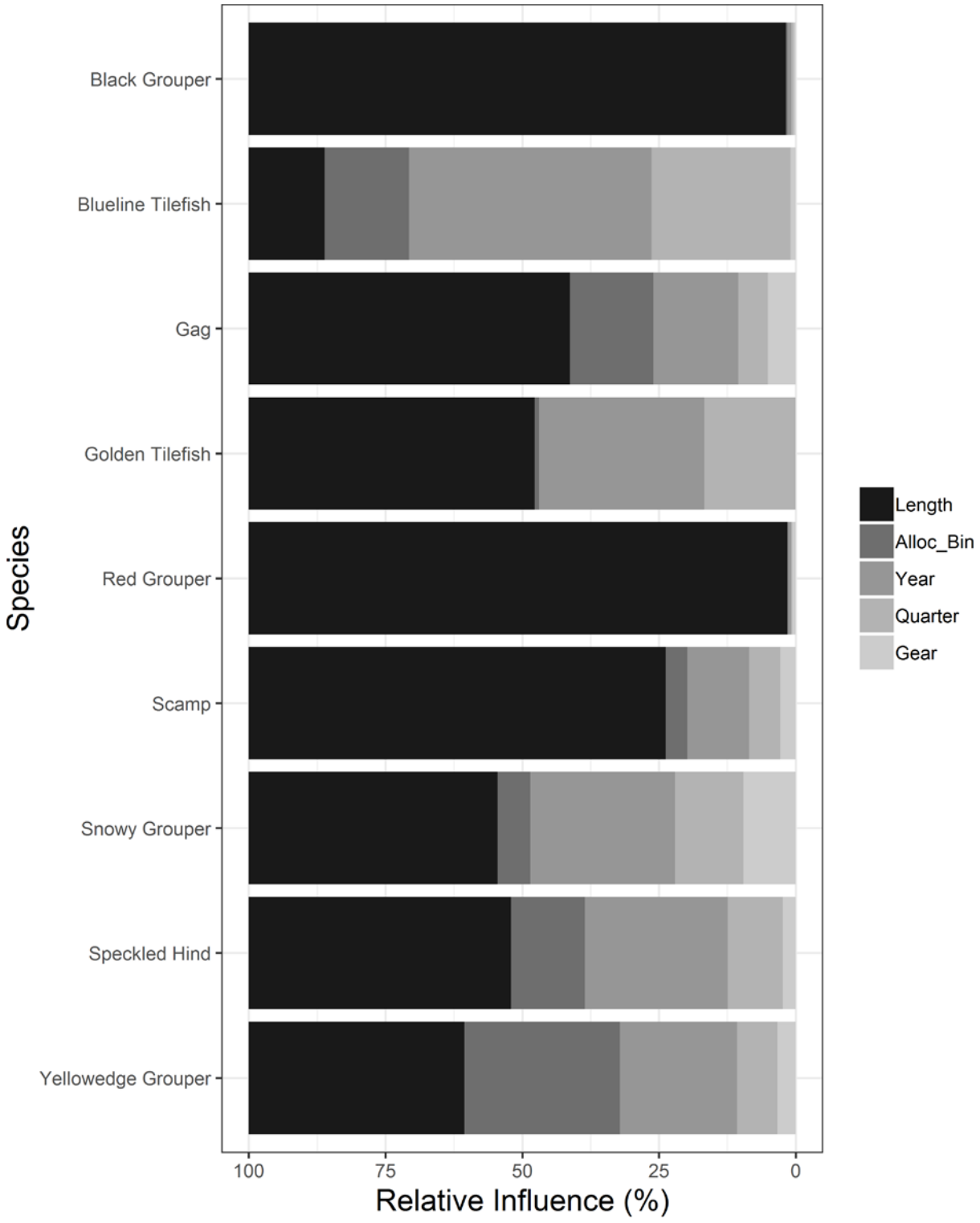

Figure C4. The relative influence for each variable affecting discarding from the boosted logistic regression tree models for nine of the Grouper-Tilefish-IFQ species.

Recreational Discards

Recreational landings from the recreational headboat, charter, and combined recreational private and shore fleets (2016 - 2023) are presented in Table C3. Recreational landings by Gulf state (2016 - 2023) are presented in Table C4. Although there are little available data on recreational discards, the discard rates are thought to be similar to those for the commercial vertical line fishery and may be even lower since there is no minimum size limit, and marketability of retained fish is not an issue for the recreational sector. However, differences between recreational sector discards and commercial vertical line discards are speculative because there is great uncertainty in what influences decisions to discard DWG species in each sector. Like commercial discard mortality, recreational discard mortality rates are thought to be very high and is assumed to be 100% for species such as yellowedge grouper (SEDAR 85).

Table C3. Recreational DWG Landings by Fishing Mode.

	Total DWG Landings (lb gw)				
	Charter	**Headboat**	**Private**	**Shore**	**Total**
2016	12,509	2,273	7,091	-	21,873
2017	2,211	3,411	128	-	5,751
2018	7,088	734	17,852	-	25,674
2019	43,327	2,752	22,785	-	68,863
2020	10,695	1,544	10,577	-	22,816
2021	12,198	1,225	12,651	-	26,074
2022	22,123	2,920	9,099	-	34,143
2023	12,290	2,480	7,937	-	22,707
Average	15,305	2,168	11,015	-	28,488

Table C4. Recreational DWG Landings by Gulf State.

	Total DWG Landings (lb gw)				
	Florida	**Alabama**	**Louis/Miss**	**Texas**	**Total**
2016	18,560	4,205	4,835	939	28,538
2017	5,504	537	5,744	1,978	13,764
2018	26,356	12,773	26,205	1,781	67,115
2019	50,550	13,398	10,370	1,109	75,428
2020	16,012	8,235	8,245	483	32,976
2021	11,356	3,886	14,296	1,217	30,755
2022	30,902	2,695	10,030	1,213	44,840
2023	25,690	3,298	3,563	1,230	33,781
Average	23,116	6,128	10,411	1,244	40,900

Other Bycatch

The directed DWG portion of the reef fish fishery in the Gulf has had documented interactions with marine mammals. U.S. fisheries are classified under the Marine Mammal Protection Act (MMPA) according to the level of interactions that result in incidental mortality or serious injury of marine mammals. In the most recent List of Fisheries (89 FR 77789; September 24, 2024),

the Gulf commercial reef fish fishery is listed as a Category III fishery under the MMPA. Category III contains fisheries where annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1 percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population. The risk of serious injury or mortality to marine mammals resulting from the recreational sector of the reef fish fishery, which uses similar gear (i.e., handlines, rod and reel, spears, etc.), is also expected to be low, although interactions with dolphins are known to occur.

The NMFS has conducted specific analyses (Section 7 consultations) to evaluate potential effects from the Gulf reef fish fishery on species and critical habitat protected under the Endangered Species Act (ESA). The most recent biological opinion (opinion) for the Reef Fish FMP was completed on September 30, 2011, and concluded that the Gulf reef fish fishery would result in take of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) and smalltooth sawfish, but would not jeopardize the continued existence of these species (NMFS 2011). As detailed in Section 3.2, the consultation is currently under reinitiation to address species listed since 2011. In summary, the Gulf reef fish fishery interacts with giant manta ray and Nassau grouper, and may interact with Rice's whale. However, NMFS determined that the Gulf reef fish fishery is not likely to jeopardize the continued existence of these species during the reinitiation period.

The Council originally addressed protected species bycatch in Amendment 18A (GMFMC 2005), which established regulations to minimize stress to endangered species incidentally caught in the reef fish fishery. These measures include:

- Mandatory Release Gear: Vessels must carry a specific suite of release gear designed to safely dehook and release protected species. Required tools include:

    - Dip nets and cushioned support devices for boarding small turtles.
    - Long-handled line cutters and dehookers for animals that cannot be brought on board.
    - Mouth gags and bolt cutters to safely remove hooks or entangled lines.

- Safe Handling Protocols: Fishermen are required to follow the *Careful Release Protocols for Sea Turtle Release with Minimal Injury*. These guidelines emphasize:

    - Keeping the animal in the water whenever possible.
    - Supporting the animal's weight horizontally if it must be boated.
    - Avoiding contact with sensitive areas like the eyes or gills.

- Documentation and Training: Every vessel must maintain a reference copy of the official release protocols on board. Additionally, a sea turtle handling and release placard must be posted in an easily viewable area (such as the wheelhouse) for quick reference during an incidental capture.

- Smalltooth Sawfish Specifics: Amendment 18A introduced unique handling requirements for sawfish, which include:

    - Cutting the fishing line as close to the hook as possible.
    - Refraining from removing the sawfish from the water or attempting to remove hooks from the "saw" (rostrum) unless using a long-handled dehooker.

Since then, the Council and NMFS have implemented several other actions aimed at reducing sea turtle bycatch and enhancing survival of captured sea turtles including:

- Reef Fish Amendment 31 (75 FR 21512, 4/26/2010)- Established a longline endorsement requirement; restricted fishing to outside the 35-fathom depth contour from June – August; and limited vessels to 1000 hooks on board, of which only 750 could be rigged at any time. The 1000 hook limitation was removed in a 2018 framework action (83 FR 5210, 2/26/2018), but the limitation on the 750 hooks rigged at any time remains in place.
- Reef Fish Amendment 49 (84 FR 25009, 5/30/2019)- Added three new sea turtle release and handling devices; updated requirements for several previously approved devices for clarity; and allowed changes to handling/release gear requirements to be made through the Council's framework process.

Three primary orders of seabirds are represented in the Gulf; Procellariiformes (petrels, albatrosses, and shearwaters), Pelecaniformes (pelicans, gannets and boobies, cormorants, tropic birds, and frigate birds), and Charadriiformes (phalaropes, gulls, terns, noddies, and skimmers) (Clapp et al., 1982; Harrison, 1983). Several species, including piping plover and roseate tern are listed by the U.S. Fish and Wildlife Service as either endangered or threatened. Note the brown pelican and bald eagle had been listed as endangered or threatened but have subsequently been delisted. Human disturbance of nesting colonies and mortalities from birds being caught on fishhooks and subsequently entangled in monofilament line are primary factors affecting sea birds. Oil or chemical spills, erosion, plant succession, hurricanes, storms, heavy tick infestations, and unpredictable food availability are other threats. There is no evidence that the directed DWG portion of the reef fish fishery is adversely affecting seabirds.

Other species of reef fish are also incidentally caught and often intentionally targeted when targeting DWG. There is some overlap between trips targeting other reef fish species. In the eastern Gulf, Other Shallow-Water Grouper (Other SWG; includes black grouper, scamp, yellowfin grouper, and yellowmouth grouper), gag, red grouper, red snapper, greater amberjack, and vermilion snapper are also caught on trips on which DWG are also captured. It should be noted that this doesn't necessarily indicate that DWG species are often captured when targeting other reef fish species. Because DWG species occur at depths at which other reef fish species are not commonly found, it is likely that these other reef fish species (especially non-grouper species) are captured while targeting DWG species when the gear is being descended to or ascended from depth.

The below species may be captured on trips targeting DWG complex species as shown in Figure C1 above. Red grouper is not overfished or undergoing overfishing (SEDAR 88, 2025). Black

grouper is included in the Other SWG complex, which has an unknown overfished and overfishing status. The Council has submitted a framework action to NMFS for review that includes an Other SWG recreational season closure from January 1 through June 30 each year. However, if implemented, this closure is expected to be a short-term measure for black grouper because the Council is working on finalizing Amendment 58A, which would make changes to the Other SWG complex, included removing this seasonal closure for black grouper. Gag is overfished (SEDAR 72 2021) and a rebuilding plan was implemented in Amendment 56 to the FMP. The mortality rate for recreational discards of gag is estimated to be relatively low at 12 percent. Scamp and yellowmouth grouper are not overfished or undergoing overfishing (SEDAR 68, 2021). The recreational mortality rate for discards of these species is estimated to be 26 percent. Vermilion snapper is not overfished or undergoing overfishing (SEDAR 67, 2020), and there is no fixed closed season that would require fishermen to discard vermilion snapper and the mortality rate for this species is estimated to be 15 percent. Greater amberjack (SEDAR 70, 2021) is overfished. Greater amberjack release mortality is also estimated to be low, ranging from 10 to 20 percent. Discards are slightly higher for commercially caught greater amberjack than they are for recreationally caught greater amberjack because of differences in minimum size limits (36 inches FL commercial vs. 34 inches FL recreational). Because greater amberjack is generally caught in pelagic waters and grouper are bottom fish, bycatch of greater amberjack is relatively low when fishing for DWG. Red snapper is not overfished or undergoing overfishing but is under a rebuilding plan because biomass is below targeted population levels (SEDAR 52, 2017). Red snapper has been increasing in abundance in the eastern Gulf over the past two decades and fishermen have indicated they are discarding more red snapper than in the period prior to that. Most commercial grouper fishermen in the eastern Gulf were allocated comparatively fewer red snapper IFQ shares than fishermen in the western Gulf, and therefore may be unable to retain large quantities of red snapper when fishing for DWG. However, the IFQ program allows for the transfer of allocation and these fishermen may buy additional red snapper allocation to allow for greater retention. Bycatch is a significant source of mortality in the red snapper fishery and NMFS implemented measures in 2008 to reduce discard mortality of red snapper and other reef fish, such as the requirement to use non-stainless steel circle hooks when using natural baits. The status of yellowfin grouper is unknown, and yellowfin grouper are not commonly captured when targeting DWG species.

Practicability of current management measures in the Reef Fish FMP and for the DWG complex component of the fishery relative to their impact on bycatch and bycatch mortality.

The following describes current management measures and their relative impact on bycatch and bycatch mortality of reef fish and DWG specifically. The commercial DWG portion of the reef fish fishery is managed under an IFQ program, whereby catch shares are allocated among shareholders with measures to prevent fishermen from harvesting more than their individual allocation. The reef fish fishery also has gear restrictions and requirements, such as hook restrictions for the longline component. The recreational sector is managed with bag limits (4 total groupers of any species, maximum of 1 warsaw grouper, 1 speckled hind) and gear restrictions. There are also several restricted fishing areas intended to protect reef fish spawning aggregations.

Size Limits

Several species of reef fish are managed using size limits, which contribute to bycatch. For those species, the size limit is necessary to accomplish a particular management objective such protecting immature fish and reducing fishing mortality. There are no size limits for any DWG complex species. DWG species are found at depths that are likely to induce substantial barotrauma upon retrieval to the vessel. Thus, size limits are not an appropriate management measure for DWG species, because high mortality rates due to barotrauma are estimated for fish that are released. As explained in the discussion above, discard rates for DWG species are very low. Further, Coggins et al. (2007) found minimum size limits did not help achieve sustainability for long-lived low-productivity species, such as groupers, if discard mortality exceeded five percent. Rudershausen et al. (2007) also concluded minimum size limits are moderately effective for reef fish caught in shallower portions of their depth ranges, and nearly ineffective in deep waters. For these reasons, size limits for DWG species would be counterproductive for managing the stocks.

Commercial IFQ Program and Recreational Closed Seasons

There are no closed seasons for DWG species. The commercial sector that targets groupers (including the DWG and Other SWG complexes) is managed under an IFQ program. IFQ shares are assigned to permitted vessels in percentages of the annual commercial quotas for DWG, red grouper, gag, and Other SWG, based on their applicable historical landings. Shares determine the amount of IFQ allocation for Gulf groupers (in pounds gutted weight) a shareholder is initially authorized to possess, land, or sell in a given calendar year. Fishing is open to shareholders throughout the fishing year, provided they have allocated quota available to them. For more information on the IFQ program, see the NMFS Southeast Regional Office Catch Shares webpage at https://secatchshares.fisheries.noaa.gov/home.

Discards by individual fishers who have exhausted their yearly DWG catch shares are not thought to be significant in the commercial sector, as several measures are available that may allow catch after an IFQ catch share has been harvested (Pulver and Stephen, 2019). Some Other SWG and DWG species have "flexibility measures," which allow for, under certain conditions, continued harvest of these species after an IFQ account holder's allocation for that species has been landed and sold or transferred. This allocation is intended to reduce bycatch of these Other SWG and DWG species by allowing fishers to retain catch that they would otherwise be required to release as bycatch. However, Amendment 58A to the Reef Fish FMP would eliminate these flexibility measures upon implementation and would thus require discard of captured species when the harvester does not have available allocation. However, shareholders that have exhausted their annual allocation are permitted to purchase (lease) additional quota from other shareholders with available quota. This provision allows fishers to retain catch that would otherwise be required to be released as bycatch. Finally, since the inception of the Grouper-Tilefish IFQ program, DWG harvest has not approached the complex ACL. Thus, individual IFQ shareholders have likely not harvested their quota since the program's inception, and even if they did, it is likely that they could obtain additional quota to legally harvest the additional fish.

There is no recreational closed season for Gulf DWG. However, the accountability measure (AM) requires that in the year following an overage of the complex ACL, the fishery be closed upon projection that the complex ACL would be harvested in the next year. However, since the separation of the DWG complex into recreational and commercial sectors, the catch limit has not been approached. Thus, no closure has been implemented for the DWG complex. Given the reduced catch limits and modified AMs considered in this amendment, it is likely that closures of the recreational season could occur. If the recreational season is closed, it could result in additional discards for the recreational sector. However, DWG species, with few exceptions, are harvested only on trips targeting these species. Therefore, the scope of increased discards is likely to be minimal and is not expected to have a substantial negative effect on DWG species.

Recreational Bag Limits and Commercial Trip Limits

Recreational bag limits and commercial trip limits are generally used to slow harvest. For groupers, the recreational bag limit is 4 per person with no more than 1 speckled hind, 1 warsaw grouper, 2 red grouper, or 2 gag. There is no commercial trip limit for groupers. Recreational DWG discards are rare, and likely mostly occur when anglers determine that a fish is so small as to not be worth keeping, or when a fish is damaged upon retrieval (e.g., shark or marine mammal damage). In addition, some fishers may discard legal-sized smaller fish in an effort to catch larger fish of the same species (high-grading). High grading is thought to be underreported in fisheries worldwide (Batsleer et al., 2016), and its prominence in the Gulf reef fish fishery is unknown. However, discards of legal-size grouper occur less frequently at larger sizes, indicating that high grading may occur.

Allowable Gear

Vertical hook-and-line gear (bandit rigs, handlines) and bottom longlines are the primary gear types used in the reef fish fishery commercial sector. Fish traps accounted for a small portion (generally 10-15%) of grouper catch prior to 2007, when they were prohibited in federal waters of the Gulf. Discards are rare in the commercial component of the targeted DWG portion of the reef fish fishery but are more common when fishing with longline gear (Pulver and Stephen, 2019). Bottom longline gear has a higher estimated discard mortality rate for most species. However, since discards are exceedingly rare in DWG IFQ fishery, they are not thought to be a significant contributor to DWG mortality.

Rod-and-reel is the primary gear used in the recreational sector. Recreational anglers also use spears to capture grouper. However, DWG generally occur at depths at which spearfishers cannot reach. Thus, spearfishing does not represent an appreciable portion of DWG recreational harvest.

In 2008, regulations were implemented requiring commercial and recreational fishermen to use circle hooks, venting tools, and dehooking devices when harvesting reef fish in the Gulf. Brulé et al. (2015) found that larger circle hooks caught significantly larger sizes of red grouper. Garner et al. (2020) also projected that larger circle hooks could modestly increase retained catch while drastically reducing the number of discarded fish. NMFS doesn't currently have adequate information on the size of circle hooks used by anglers in the Gulf or on the effect that has on bycatch of undersized species. The requirement to use a venting tool was removed in 2013 (78

Fed. Reg. 46820, Aug. 2, 2013). However, the Descending Device and Venting Tool for the Direct Enhancement of Snapper Conservation and the Economy through Novel Devices Act of 2020 (DESCEND Act) required, as of January 2021, all vessels fishing for Gulf reef fish to have a venting tool or descending device rigged and ready for use. This requirement in the DESCEND Act expires on January 14, 2026, but the Council has approved a framework action to continue these requirements.

Time or Area Closures

There are currently three restricted fishing areas, which were developed to specifically protect spawning aggregations of gag in 2000. These area closures may also serve to protect DWG. The Madison-Swanson, Steamboat Lumps, and The Edges marine restricted fishing areas are located in the northeastern Gulf at a depth of 40 to 60 fathoms. Madison-Swanson and Steamboat Lumps prohibit bottom fishing, trolling (except for highly migratory species), and possession of reef fish at all times (GMFMC 2020) year-round, while The Edges has the same prohibitions in effect from January through April. All fishing is also prohibited in the Tortugas marine reserves in the southern Gulf. Marine reserves and time/area closures benefit fish residing within reserve boundaries by prohibiting their capture during part or all of the year. Within marine reserves, fish that are undersized potentially have an opportunity to grow to legal size without the threat of being captured by fishing gear. If these fish emigrate from the marine reserve (i.e., spillover effect), then they may be caught as legal fish outside the reserve, thereby reducing bycatch. However, fishermen may redistribute their effort to areas surrounding the marine reserve. If fishing pressure in these areas is increased, then any benefits of reduced bycatch of fish in the marine reserve may be partially or fully offset by increases in bycatch of fish residing outside the marine reserve.

Commercial fishermen with a bottom longline endorsement must fish outside the 35-fathom contour from June – August (must fish outside 20-fathom contour the rest of the year). This restriction is in place to reduce interactions with sea turtles. Given that few DWG are harvested in waters shallower than 35 fathoms, it is unlikely that this closure measurably restricts DWG harvest.

Alternatives being considered to minimize bycatch

The Reef Fish FMP, as amended over time, includes measures to minimize bycatch and bycatch mortality to the extent practicable. Therefore, no measures are proposed in this amendment to directly reduce the bycatch of DWG and other species. However, the choice of alternatives in Action 2 and Action 3 is likely to impact the amount of bycatch. Bycatch is expected to be greater in the commercial sector, because when the commercial quota has been landed, all DWG species captured subsequently must be released. Because there is a greater likelihood that these DWG species would be captured on trips not necessarily targeting DWG species (e.g., longline trips targeting gag or red grouper), there is a greater likelihood of regulatory discards occurring on these trips. The recreational sector is less likely to discard DWG species because, due to the deep depths at which they are found and the great distance they are generally found from shore, recreational anglers are likely to encounter these species on trips targeting these species, and not as bycatch on trips targeting other species.

Action 1
Action 1 would set the stock catch limits, while Action 2 would designate allocation percentages to the commercial and recreational sectors and set sector ACLs and ACTs (quota). In Action 1 **Preferred Alternative 2**, which is the only viable alternative, would reduce the stock acceptable biological catch (ABC) and ACL by about half compared to no action (**Alternative 1**). The reduction in catch limits is likely to increase discards of DWG species, because under these new catch limits, the complex ACL is expected to be captured each year, which has not occurred prior.

Action 2
For the commercial sector (assuming Action 1 Preferred Alternative 2 is selected), Action 2 **Alternative 2** is likely to result in the least discards of the Action 2 alternatives because it would set the highest commercial quota, where the majority of discards are expected to occur. However, because there isn't a great difference between the commercial quotas between the Action 2 alternatives (approximately 7% maximum), and because differences in the scope of discards between the commercial and recreational sector are speculative and putatively minor, the difference between the alternatives in Action 2 with regard to overall discards are expected to be minimal to negligible. All alternatives in Action 2, including Preferred Alternative 3, are expected to have negligible impacts on discards.

Action 3
Action 3 would modify the AMs for the recreational sector and require closure of the recreational fishing season based on those AMs. Predicting the frequency of closures under the Action 3 alternatives is, for the most part, speculative. **Alternative 2** is more likely to trigger a closed season than **Alternative 1** or **Alternative 3** because it only requires exceeding the recreational ACL in a given year to trigger a closure (upon reaching the recreational ACL) in the following year. **Alternative 1** would require exceeding the complex ACL in a given year, and **Alternative 3** would require exceeding the recreational and complex ACLs in a year to trigger a closure in the next year. **Preferred Alternative 4** would require the moving average of the prior three years' recreational landings to exceed both the average recreational ACL and the average complex ACL. In spite of the differences in the recreational ACLs between the alternatives, an appreciable effect on discards is not expected. This is because commercial harvest is expected to reach that sector's quota each year, and thus differences between **Alternatives 1-3** are expected to be minor. It is difficult to predict the frequency at which the recreational season would close under **Preferred Alternative 4** due to the variability in recreational landings, and the effect that a large overage (or underage) in a given three-year period would have on subsequent years' closures. However, the recreational sector is not expected to contribute meaningfully to discards due to the manner in which the sector fishes.

Practicability Analysis

Criterion 1: Population effects for the bycatch species (DWG Complex)

Measures considered in this amendment would: 1) Revise the Gulf DWG complex maximum sustainable yield (MSY) proxy, overfishing limit (OFL), ABC, and complex ACL; 2) Set

recreational and commercial sector allocations, ACLs and quotas; and 3) Modify the recreational DWG AMs.

Management measures including reduced catch limits are expected to result in a loss of yield, since the new catch limits are lower than recent harvest levels. In addition, reducing the catch limits for the DWG complex is expected to result in a very slight increase in regulatory discards. However, because DWG species generally may be targeted and avoided while fishing, the decreased ACLs and associated effort is expected to result in a decrease in overall DWG mortality, in spite of the expected slight increase in bycatch.

Although the recreational sector generally has greater discards than the commercial sector, it is not known whether that pattern holds when targeting DWG species, because when compared to other reef fish species, harvesting DWG species often requires more specialized gear, greater fishing skill, and larger vessels to reach the areas to harvest them. In addition, there are no minimum size limits, and DWG species experience higher mortality when captured and released, suggesting they may be more likely to be kept when they are captured by anglers in the recreational sector. The proposed AMs, coupled with the reduced quotas, may result in occasional closures of the recreational season and thus result in a period of regulatory discards. However, DWG species are not thought to be often captured when fishing for other species. Other species are captured when fishing for DWG, but this is likely because few species co-occur at the depths at which DWG occur, but other species may be captured when gear is being descended to or ascended from these depths. Thus, DWG can be easily avoided relative to other reef fish species.

A lower commercial quota may lead to slightly increased discards, as DWG species may be captured after a commercial entity's IFQ allocation has been harvested, which would require discard of the captured species. This is especially true for the longline component of the commercial sector, as DWG species may be captured while targeting other species, such as gag. Longline gear is known to have a higher mortality rate than other fishing gears, and this is especially true at depths at which DWG species are captured. However, commercial fishermen may be able to obtain additional allocation and are also likely to fish in areas where DWG species are not as prevalent (e.g., shallower areas) once their DWG allocation has been used. Thus, the increase in bycatch relative to the current management structure is expected to be minor, and the decreased sector ACLs and ACTs and concomitant decrease in fishing effort and harvest, is expected to result in a decrease in overall DWG mortality despite any slight increase in bycatch.

Criterion 2: Ecological effects due to changes in the bycatch of DWG (effects on other species in the ecosystem).

Relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict. The Council's SSC accepted the projections from SEDAR 85 for the purposes of developing management advice. DWG species are opportunistic predators that feed on reef fishes, benthic and pelagic fishes, and crustaceans (Grüss et al., 2015).

The proposed reduction in the DWG catch limits could result in increased effort towards other species within and outside the reef fish complex. However, given that only a small percentage of anglers are able to target DWG due to the distance of DWG species from shore, specialized gear, etc., the scope of the increase in effort on other species is expected to be minor. In addition, because other species may be captured while fishing for DWG (e.g., gag, red snapper, greater amberjack), there could be a reduction in harvest and discard of these species which may cancel out the minor possible increase in effort predicted. There is also a possibility that as DWG complex populations increase to previous levels, the larger stock could assert more predation pressure on other co-occurring species, which may also result in decreased populations of those species.

Although the changes in DWG catch limits and AMs are likely to have some impact on other species in the ecosystem, the effects are difficult to quantify due to the complex nature of the ecosystem they live in. It is unlikely that allowing DWG complex populations to increase to more historic population levels in the long term would negatively impact other species in the ecosystem.

Criterion 3: Changes in the bycatch of other species of fish and invertebrates and the resulting population and ecosystem effects

Population and ecosystem effects resulting from changes in the bycatch of other species of fish and invertebrates are difficult to predict. Fishermen can specifically target DWG, although they may still catch other species. Red snapper, vermilion snapper, greater amberjack, and gag are commonly caught when targeting DWG. Of these species, gag and greater amberjack are overfished, and those species, in addition to red snapper, are operating under a rebuilding plan (NMFS 2025 Summary of Stock Status for Non-FSSI Stocks). Regulatory discards significantly contribute to fishing mortality in all of these reef fish species, especially when captured in deeper waters. However, given that a reduction in fishing effort for DWG is expected to occur under this amendment, there may be a corresponding decrease in bycatch of species commonly caught while fishing for DWG, except as explained in Criterion 2 above.

Criterion 4: Effects on marine mammals and birds

Measures evaluated in this amendment are not expected to significantly affect marine mammals and birds. There is no information to indicate marine mammals and birds rely on DWG for food, and they are not generally caught by fishers harvesting DWG.

Criterion 5: Changes in fishing, processing, disposal, and marketing costs

The reduction in DWG commercial ACL and quota, and thus in IFQ allocation, for commercial fishermen is expected to result in economic loss. However, if the reduced commercial allocation and lower expected supply of DWG leads to increased market prices for these species, which is suggested by Keithly and Tabarestani (2018), the loss in ex-vessel revenue and profits to commercial fishermen may be lessened. Recreational anglers may experience closures to recreational harvest of DWG through this action and resultant losses in consumer surplus.

However, this reduction affects only a small number of recreational fishermen, as few have the means or desire to reach the locations and depths necessary to target DWG species. Due to the multi-species nature of the reef fish fishery, the reduced opportunity for fishermen to harvest DWG is likely to be supplemented by increasing effort and harvest for other species, so it is unlikely to have a substantive negative effect on that sector. The for-hire (charter/headboat) industry may experience minor losses from DWG recreational closures; however, recreational trips targeting DWG make up a negligible percentage of all fishing trips taken by for-hire vessels (Section 3.3.2).

No changes to processing, disposal, or marketing costs are expected from this action, because it does not alter the type of product landed, only the quantity of such, and there are ample domestic and imported substitutes available for dealers, processors, and retailers to shift to.

In general, cumulative changes in this amendment are moderate, and are likely to result in some economic loss, especially for the commercial sector. For a more complete discussion of the changes in fishing costs associated with the various management actions, see Sections 4.1.3, 4.2.3, and 4.3.3 of this amendment.

Criterion 6: Changes in fishing practices and behavior of fishermen

Measures proposed in this amendment are expected to have negative impacts on fishing practices for both commercial fishermen and recreational anglers as a result of the decrease in the allowable catch limits for both sectors. There is expected to be a reduction in fishing effort and landings for commercial DWG IFQ shareholders and those holding allocation. There is also expected to be an occasional closure of the DWG recreational fishing season, resulting in reduced fishing days targeting DWG for both the for-hire and private angler components. These effects may be largely mitigated in the private angler component due to the ability of these fishermen to target other species when DWG harvest is prohibited. Since there are few for-hire businesses that target DWG and because recreational season closures are only expected to occur occasionally under any of the alternatives being considered, only minor negative effects are expected for for-hire fishermen and businesses.

Criterion 7: Changes in research, administration, and enforcement costs and management effectiveness

Proposed measures are not expected to significantly impact research, administration, and enforcement costs and management effectiveness. The potential impacts on the administrative environment depend on the action necessary to compare landings to the catch limits and the likelihood of needing to implement a commercial or recreational closure or take additional action to prevent overfishing. All action alternatives would result in a decrease in the commercial ACL and in setting a recreational ACL that is below recreational landings estimates in recent years. Because the IFQ program acts as the AM for the commercial sector, no commercial in-season closure would be implemented based on the new catch limits. Decreasing the recreational ACL is expected to result in an occasional closure of the recreational sector, although the frequency

and timing of closures is difficult to predict due to the uncertainty and variability in this sector's annual estimated harvest.

Criterion 8: Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources

A reduced ACL and ACT for the recreational harvest of DWG is expected to positively impact the stock by relieving fishing pressure and allowing it to build to a more robust level but is expected to have negative economic and social impacts, at least in the short term. However, providing the recreational sector a slightly larger allocation of the stock ACL would have positive impacts by increasing the fishing opportunities for recreational fishermen over the long term.

The decrease in the commercial catch limits is expected to result in reduced DWG landings than has occurred in recent years. However, in the long-term the stock size is expected to increase, which will allow for greater harvest in the future. The shift in allocation also reduces the commercial sector's share of the complex ACL and, therefore, the economic value of commercial fishing activities. The revised allocation would, however, account for the more recent increase in DWG harvest by recreational sector, both in landings and relative to the commercial sector.

Overall, there are expected to be short-term negative effects in the economic, social, and cultural value of fishing activities and non-consumptive uses of fishery resources associated with the amendment, although the effects on the recreational sector are likely to be largely mitigated because of the multi-species nature of the reef fish fishery, which would allow fishermen to target other species when fishing for DWG is not permitted. This is less true for the commercial sector, as there is expected to be revenue lost from the DWG complex ACL and quota reductions. Any reduction in bycatch and overall mortality may result in an increase in the DWG stock in the long-term, which would positively affect the social and economic value of fishing activities. For a more complete discussion, see sections 3.3 and 3.4, and sections 4.2.3, 4.2.4, 4.3.3, 4.3.4, and 4.4.4 of this document.

Criterion 9: Changes in the distribution of benefits and costs

Currently, there is no recreational sector allocation specified, although the commercial sector is allocated 96.5% of the complex ACL based commercial landings that occurred from 2001-2004. This amendment would modify the allocation to 89.79% commercial and 10.21% recreational based on average catch by the recreational sector for the most recent five years of data (2019-2023). This proposed allocation would shift benefits from the commercial sector to the recreational sector. However, the shift accounts the more recent participation by the recreational sector while still maintain the commercial sector's historically large share of the complex ACL.

Criterion 10: Social effects

Bycatch is considered wasteful because it reduces overall yield obtained from the fishery. Lower recreational and commercial catch limits and predicted recreational season closures are expected to have negative social effects under all actions and alternatives. Bycatch may occur due to limited opportunity to fish for DWG resulting from lower ACLs and shortened seasons. However, DWG can generally be targeted or avoided, so despite a slight increase in bycatch, DWG mortality is expected to decline substantially. Thus, short term negative social effects due to reduced ACLs and recreational season closures are expected to be replaced by long-term positive social effects as the DWG stock size and catch limits increase.

CONCLUSION

Analysis of the ten bycatch practicability factors indicates that the management measures in this amendment may result in a slight increase in bycatch of DWG and other reef fish species. However, the management measures are necessary to maintain the productivity of the DWG complex stocks, particularly yellowedge grouper. Bycatch and bycatch mortality have been reduced to the extent practicable through the management measures implemented under the Reef Fish FMP over time, as described above. No additional measures to reduce bycatch and bycatch mortality were considered in this amendment because there is currently no practicable way to achieve further reductions. Maintaining the higher catch limits may avoid increases in bycatch associated with recreational closures and less IFQ allocation but would not protect the DWG stocks to the extent necessary, as indicated by the best scientific information available. Thus, the management measures in this amendment minimizes bycatch or bycatch mortality to the extent practicable, consistent with other national standards and maximization of net benefits to the Nation.

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APPENDIX D: PUBLIC COMMENTS RECEIVED

Reef Fish Amendment 58B
Modifications to Deep-water Grouper Management Measures

Madeira Beach, Florida
August 11, 2025

Council/Staff
Kesley Banks
Carrie Simmons
John Froeschke
Ryan Rindone
Sarah Gardiner
Emily Muehlstein
Matt Freeman

4 members of the public attended.
3 members of the public spoke.

Jason Delacruz - Commercial Fisherman / Dealer
He supports Action 2, Alternative 4. It's fair to give both sectors an even haircut. The commercial sector has been constrained to its portion of the landings because of management under the IFQ system and because of the 1000 hook limit on longline vessels. While the recreational sector has been able to grow. For Action 3, it is difficult to wait three years to constrain overages. However, if we're not going to initiate a data collection system for the recreational sector it's better to keep them out of a payback cycle like we're seeing with other species. He also mentioned that once the price of red grouper shares tanks, the deep-water quota will be used a leverage. Meaning, buyers will be forced to buy red grouper in order to get deep-water grouper quota. Jason also expressed concern about shareholders that don't fish or aren't involved in the industry.

RJ Schwab – Commercial Vessel Owner
He owns three commercial boats and fisheries management is the scariest part of his future. Everyone is struggling to stay in the business and the science is too far behind. The red grouper stock isn't good right now. He is concerned that the quota price is going to go up again. His fleet has shifted to deep-water fishing since red grouper harvest was so low and now the increase cost of the deep-water grouper quota is going to kill him. He never had a chance to earn quota, the IFQ program was put in place before he was old enough to fish. There is no future in this fishery if you can't afford to buy-in.

Eric Schmidt – Commercial and For-Hire Fisherman
The recreational harvest estimates for deep-water grouper are low. There has been a large increase in charters targeting deep-water species.

Panama City, Florida
August 14, 2025

Council/Staff
Billy Broussard
Ryan Rindone
Sarah Gardiner

3 members of the public attended.
2 members of the public spoke.

Mark Tryon – Commercial Owner/Operator
He is a commercial day boat fisherman and has some DWG allocation. He does not participate in the DWG fishery to the same degree as longline vessels. He thinks accountability is needed for recreational fisheries, Gulf-wide. He thinks there is too much resistance to accountability in recreational fisheries, perhaps because the Council does not want to know what the recreational sector is catching. He thinks recreational fishing has negatively affected his day boat fishing, especially for red snapper, and sees the same starting for the DWG deep-drop fishery. The technology available for recreational anglers to fish has increased dramatically and has made a decent fisherman out of someone without much experience. He thinks the Council needs to acknowledge the burgeoning number of recreational DWG vessels.

Bob Zales II – Southeaster Fisheries Association.
He is representing the Southeastern Fisheries Association and is in favor of Alternative 1 for Actions 1 and 2, and not commenting yet on Action 3. He thinks that final action on the amendment should be delayed until more information can be collected and analyzed on the economic effects to the commercial sector, the fishing effort by permit, and the effects from vessels needing to hire foreign crew when domestic crew are unavailable or unwilling. He also thinks that smaller increments of MSY proxy values need to be analyzed, since they can be the difference between a stock being overfished or undergoing overfishing. He thinks the recent executive orders from the Administration need to be considered before putting new restrictions on the commercial sector. He thinks that there needs to be a special permit for recreational fishing for DWG species, and to maintain that permit, anglers should be required to report their catch and effort per trip. He thinks the technology exists to make recreational mandatory reporting a reality, and that NOAA Fisheries should pursue such measures.

Ft. Myers, Florida
August 18, 2025

Council/Staff
John Sanchez
Matt Freeman
Emily Muehlstein

3 members of the public attended.
3 members of the public spoke.

Sean Beckham - Commercial Fisherman, Owner/Operator
Charter for-hire catch of deep-water grouper species is significant and increasing. The commercial IFQ program doesn't work for him because he owns 100% of his operation (vessels and permit) and only makes a fraction of the profit because he is not a shareholder. All the liability and expense to fish, including the cost recovery fee, falls on him, and he only makes 20% of the profit. He can't make a living. Depredation is a worsening issue; goliath grouper and sharks tear up his gear and take his fish.

Matthew Pless - Commercial Fisherman, Owner/Operator, Seafood Dealer
Management is based on bad science. There are no real counts or math accounting for recreational harvest, and that's a huge issue. Recreational data are non-existent, so it's impossible to make good management decisions. The private anglers that are harvesting tons of deep-water grouper don't land at boat ramps. They all land behind private residences, so they're not even counted by the flawed estimate system. As a commercial harvester, every pound of fish he harvests is accounted for. These private guys have plenty of money to create a reporting platform. He works himself to the bone and doesn't get any breaks, but the private guys can fish unchecked.

Nick Ruland - Commercial Fisherman, Fish House Owner, Seafood Restaurant Owner
The harvest numbers have been bogus from day one, and we're building management off of false data. That started even before the IFQ program was initiated. NOAA is using pounds to track harvest happens in the commercial sector, but the recreational sector is based on number of fish which is inaccurate to further extrapolate. The discards in the recreational sector need to be accounted for; deep water species don't survive catch and release. People high-grade; they swap out smaller fish for bigger fish when they catch them. More deep-water grouper is thrown away dead than are kept by recreational fishermen, and it's an issue. Allocations should be created for both sectors. He doesn't want the increasing recreational sector to wipe out the commercial industry. He could live with any of the alternatives that establish a recreational allocation but, it's moot until the data is collected properly from the recreational sector. The Council should create a mandatory reporting program for the recreational sector. Ideally, it should collect information on all species, but it can start with the deep-water grouper species since they're more of a niche fishery accessible only by private fishermen with technology. There are lots of good scientists that take otoliths from his fish house, and he would love to see how that information is

used. He suggests that a data report be tied to the trip tickets and reported back to the captains, so they can better understand their impact and be better stewards.

Virtual Public Hearing
August 19, 2025

Council/Staff
Chris Schieble
Emily Muehlstein
Bernadine Roy
Sarah Gardiner

5 members of the public attended.
1 member of the public spoke.

Ashford Rosenberg – Reef Fish Shareholders' Alliance
The Alliance requests the Council change the preferred alternative in Action 2 to Alternative 2. Alternative 2 would reduce discards and promote fairness and equity. There is extreme management uncertainty in the recreational sector and the stock is undergoing overfishing. There is no justification for increasing allocation for the recreational sector without effective accountability measures. It is inequitable to commercial fishermen who are constrained to their quota when there has been no way to constrain recreational landings. When the PSE of estimates is greater than 50%, it is not suitable for management and increasing the allocation to the recreational sector would increase uncertainty further. Most private vessels accessing deep-water grouper are not surveyed by APIS because they are leaving from private docks. It is biologically irresponsible to increase their portion of the harvest and it increases the risk of overages and undermines rebuilding.

In Action 3, the Council should modify alternatives to allow NMFS to set the length of the recreational season based on the best available science. The Council should also consider creating a buffer to account for management uncertainty. Finally, the Council should add a payback provision to the recreational sector. There is a huge amount of uncertainty around recreational landings. We're cutting the quota in half and accountability measures need to be more robust to rebuild the stock. The sector does some flexibility in accountability measures but the 3-year moving average is less responsive and not effective for a stock that may be in trouble.

She suggests that the Council initiate work on a document that explores a recreational deep-water grouper permit with a mandatory reporting requirement to address uncertainty. The program could be comparable to the Louisiana Offshore permit. Recreational reporting ties into the Restoring American Seafood Competitiveness Executive Order and is supported directly in the recommendations from the Recreational Initiative. Starting with these deep-water species is a good way to dip out toes in the water with recreational reporting.

Written Public Comment
Comments received between November 2024 and August 19, 2025

- Data currency for the new quotas should be clarified and the ACLs for the recreational sector should not be additive since they're calculated with a different currency.
- Reallocation alternatives (Action 2, Alternatives 2-4) should be put on hold until the MRIP-FES pilot study is complete.
- A larger ACL for the recreational sector will not necessarily reduce the likelihood of an ACL overage.
- Better analysis of how actions will affect discards should be included in the document.
- Support for creating separate allocations for the sectors.
- The recreational sector, with no accountability, should not be given a greater portion of the allowable harvest.
- For-hire charter vessels need better accountability immediately especially since they harvest so many deep-water groupers.
- Cutting the deep-water grouper quota is going to drive up the price of allocation and increase the cost of red grouper.
- Cutting the quota will force longliners to fish closer to shore using bandit gear.
- Electric reels in deep-water fishing should be eliminated or limited so that the vessels to with electric reels are onboard may only keep one person's bag limit.
- The 4% commercial buffer should be eliminated because the sector is highly accountable.
- Electric monitoring data from commercial vessels should be considered because preliminarily, it shows fewer dead discards in the commercial fishery than assumed.
- Incorporate broader economic data from the IFQ programs into the economic analysis to provide a comprehensive understanding of the impact of allocations.
- An interim assessment on yellowedge grouper should be added to the SEDAR schedule.
- Stakeholder feedback from a yellowedge grouper Fishery Ecosystem Issue should be collected and reviewed. This could be used to evaluate ecosystem-wide factors that are influencing poor recruitment.
- Consider using multi-year ACLs to address the high errors in recreational data.
- Address allocations in a separate amendment.
- New deep-water grouper regulations should not unfairly burden the recreational sector.
- Effort in the commercial sector is not increasing while the number and quality of recreational boats grows.
- Recreational data collection efforts need to improve.
- Action 2, Alternative 4 is the best way to reduce recreational overages.
- Action 3, Alternative 4 fails to constrain recreational catch.
- A year-round recreational season is not justified with the catch reductions.
- Headboats should not be part of the recreational quota.

APPENDIX E: HISTORY OF RECREATIONAL DATA COLLECTION IN THE GULF OF AMERICA

Federal Data Collection Programs

The National Marine Fisheries Service (NMFS) created the Marine Recreational Fisheries Statistics Survey (MRFSS) in 1979. In the Gulf of America (Gulf), MRFSS collected recreational catch and effort data beginning in 1981. MRFSS included both the Coastal Household Telephone Survey (CHTS) and onsite interviews at marinas and other points where recreational anglers fish. In 2008, MRIP replaced MRFSS to meet increasing demand for more precise, accurate, and timely recreational catch estimates. Until 2013, recreational catch, effort, and participation were estimated through a suite of independent but complementary surveys: telephone surveys of households and for-hire vessel operators that collected information about recreational fishing activity and an angler intercept survey that collected information about the fish that were caught.

NMFS began incorporating a new survey design, the Marine Recreational Information Program's (MRIP) Access Point Angler Intercept Survey (APAIS), in 2013. This new design addressed concerns regarding the validity of the survey approach, specifically that trips recorded during a given time period are representative of trips for a full day, by extending the time period dockside samplers stayed at an assigned location (Foster et al. 2018). The more complete temporal coverage with the new survey design provides for consistent increases or decreases in APAIS angler catch rate statistics, which are used in stock assessments and management, for at least some species (NMFS 2019).

To assess fishing effort in the for-hire component, MRIP samplers contact charter vessel operators (a weekly sample of 10% of the fleet) by telephone to conduct the For-Hire Telephone Survey (FHTS) for fishing effort. Charter vessel operators are required to report all trips taken during selected weeks (effort only) whenever they are selected to participate in this portion of the MRIP survey. The FHTS has a stratified design, with for-hire vessels as sampling units, and is stratified by state, sub-state region (applicable to Florida only), vessel type (charter or headboat [as defined by the US Coast Guard]), and sample week within the two-month wave.

MRIP transitioned from CHTS to a new mail survey (Fishing Effort Survey [FES]) in 2015, and in 2018, MRIP-FES replaced MRIP-CHTS. Both survey methods collect data needed to estimate marine recreational fishing effort (number of fishing trips) by shore and private/rental boat anglers on the Atlantic and Gulf coasts. MRIP-CHTS used random-digit dialing of homes in coastal counties to contact anglers. The new mail-based FES uses angler license and registration information as one way to identify and contact anglers (supplemented with data from the U.S. Postal Service, which includes virtually all U.S. households). Because FES and CHTS are so different, NMFS conducted side-by-side testing of the two methods and found that, in general, total recreational fishing effort estimates generated from the FES are higher — and in some cases substantially higher — than the CHTS estimates (NMFS 2019). This is because the FES is designed to measure fishing activity more accurately than the CHTS, albeit while

recognizing a greater degree of uncertainty in those landings estimates. This increase in estimated effort is not because there was a sudden rise in fishing effort, but rather because FES better targets actual fishery participants through the directed mail survey. Likewise, the increase in uncertainty about the effort estimates reflects uncertainty that was also present in CHTS but went unaccounted due to biases that were identified as FES was developed. NMFS developed a calibration model to allow historic effort estimates using MRIP-CHTS to be compared to new estimates from MRIP-FES.

2023 MRIP-FES Pilot Study and 2024 Comprehensive Study

At the August 2023 Council meeting, NOAA Fisheries Office of Science and Technology (OST) discussed the release of a pilot study (NMFS 2023[38]), which evaluated potential respondents' bias (e.g., recall error) in the mail portion of the recreational FES survey used to estimate effort. The 2023 pilot study evaluated this bias for a portion of the year across several states, and preliminary results suggest the order of the questions in the survey led to overestimation of fishing effort by MRIP-FES. As a result of this, NMFS OST conducted a more comprehensive pilot study which began in 2024 and is expected to end data collection in 2025. NMFS OST plans to produce a public report with key findings and estimate comparisons in summer 2025 and determine if a new design will be implemented in 2026, pending study results and peer review. In mid-2026, NMFS OST is expecting to produce calibrated historical effort estimates to reflect the findings of the updated survey design for use in future stock assessments and fisheries management. Prior to when data calibration is finalized in spring 2026, any expectation about results would be speculative. After the updated survey data are finalized, it will then be available for evaluation by data users (e.g., the Southeast Fisheries Science Center, Southeast Regional Office, and the Council).

State of Louisiana LA Creel Program and Texas Parks and Wildlife creel survey

Since 2014, Louisiana generates weekly estimates of catch and effort through their LA Creel program. LA Creel uses a combination of data collected dockside (access point survey) and through weekly phone and email effort surveys to estimate recreational saltwater fish harvests. The LA Creel program consists of biologists conducting interviews at public fishing sites, with charter captains and groups of saltwater anglers about their fishing activities. LA Creel provides weekly recreational fishery information to aid in the management of Louisiana's fishery resources. It is composed of an on-site access-point survey and two weekly effort surveys stratified across five basins. The access point survey provides estimated catch rates per trip. One effort survey generates estimated private angler effort in the form of total angler trips and the other does the same for charter trips. Licensed private anglers are stratified across geographical regions and Louisiana's Recreational Offshore Landings Permit (ROLP) holders, while licensed charter captains are stratified between those with and without ROLP permits. Using licensed anglers provides a clearly defined angler frame with high quality contact

[38] https://www.fisheries.noaa.gov/recreational-fishing-data/fishing-effort-survey-research-and-improvements

information, while stratifying within this frame allows LA Creel to account for differences in fishing activity across the state. Access point survey assignments are randomly drawn based on fishing pressures weighted by the types of activities present and the total angler activity. LA Creel boasts production of weekly landings at the basin level on just a two-week delay, which can reduce recall bias and provide near real time landings estimates that can be used in monitoring recreational quotas and identifying impacts to recreational landings from short term events. LA Creel contacts for-hire captains via telephone at random, with a goal of reaching 30% of captains who fish offshore (those who hold a ROLP) and 10% who fish inshore (who do not hold a ROLP). During red snapper season, LA Creel contacts 100% of captains who hold offshore permits.[39]

Alabama and Mississippi piloted versions of LA Creel in their own states alongside the MRIP APAIS and FES programs in 2024. Beginning in 2025, both Alabama and Mississippi were operating their own iterations of LA Creel (AL Creel and MS Creel, respectively) at full implementation, alongside MRIP.

Texas Parks and Wildlife Department (TPWD) conducts their own creel survey to estimate private and charter landings in Texas. TPWD Sport-boat Angling Survey uses dockside interviews at recreational boat access sites to generate catch and effort estimates for finfish species caught by private boat and charter operators off the Texas coast. Texas reports recreational data in high (May 15 through November 20) and low (November 21 through May 14) activity periods. Creel surveys are conducted from 10 AM to 6 PM at specified public boat-access sites along the Texas coast. Over 1,000 surveys are scheduled annually on randomly selected weekdays and weekends in proportion to the amount of fishing activity at each site. Charter vessel catch and effort data in Texas are monitored by the TPWD Coastal Creel Survey. This is a field-intercept survey of boat-based fishing, including for-hire vessels. This survey estimates fishing effort and catch (harvest only) on a seasonal (high-use and low-use) basis.

Like all surveys, both LA Creel and Texas state surveys have inherent uncertainty. LA Creel is presently operating only in Louisiana, Mississippi, and Alabama, and the TPWD survey only in Texas, and therefore cannot generate Gulf-wide estimates. LA Creel is comparable in survey methodology to the MRIP design. The TPWD survey only produces landings estimates and reports every six-months. This time frame limits in-season monitoring for short fishing seasons (e.g., weeks or months). Both state effort surveys, like APAIS, are also limited to intercepting anglers at public access points and their willingness to answer dockside interview questions, and in the case of LA Creel, the effort (telephone survey) portion of the program.

[39] https://www.lafisheriesforward.org/wp-content/uploads/2024/02/LFF_FastFacts_LaCREEL_2024-01-ADA.pdf