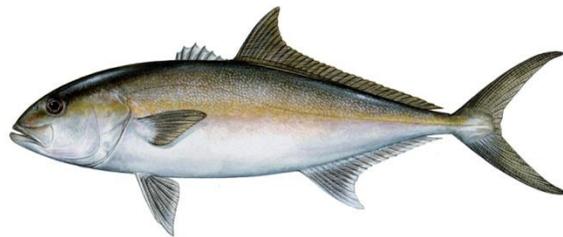


Modifications to Gulf of Mexico Greater Amberjack Commercial Trip Limits



**Draft Framework Action to the Fishery Management Plan for the
Reef Fish Resources of the Gulf of Mexico**

April 2019



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ENVIRONMENTAL ASSESSMENT COVER SHEET

Name of Action

Modifications to Gulf of Mexico Greater Amberjack Commercial Trip Limits

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Type of Action

Administrative
 Draft

Legislative
 Final

ABBREVIATIONS USED IN THIS DOCUMENT

| | |
|---------|---|
| ABC | acceptable biological catch |
| ACL | Annual Catch Limit |
| ACT | Annual Catch Target |
| Council | Gulf of Mexico Fishery Management Council |
| EIS | environmental impact statement |
| EA | environmental assessment |
| FMP | Fishery Management Plan |
| Gulf | Gulf of Mexico |
| gw | gutted weight |
| MFMT | maximum fishing mortality threshold |
| MSST | minimum stock size threshold |
| MSY | maximum sustainable yield |
| NMFS | National Marine Fisheries Service |
| OY | optimum yield |
| SEDAR | Southeast Data, Assessment, and Review |
| SEFSC | Southeast Fisheries Science Center |
| SPR | spawning potential ratio |
| SSC | Scientific and Statistical Committee |
| TAC | total allowable catch |
| ww | whole weight |

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CHAPTER 1. INTRODUCTION

1.1 Background

The commercial sector harvest of greater amberjack is managed to an ACT (quota) and the fishery is closed for the remainder of the fishing year when the quota is met or projected to be met. The commercial season opens January 1 each year, is closed from March 1 through May 30, and re-opens on June 1 if the quota has not been met. Greater amberjack are rarely a target species by the commercial sector but are caught while targeting other reef fish. A majority of trips land less than 500 lbs gutted weight (gw) with greater amberjack typically being caught while other reef fish species are targeted. Commercial fishermen prefer to have as long of a season as possible, since these incidentally-caught fish must be discarded if the season is closed. To address this problem, the Council established a commercial trip limit of 2,000 lbs whole weight (ww) (1,923 lbs gw) in 2013 (GMFMC 2012), and further reduced the trip limit to 1,500 lbs gw in 2016 (GMFMC 2015). Despite these changes, the commercial sector routinely meets or exceeds its quota before the end of the commercial fishing year, requiring an in-season closure and a payback (see details in “Landings” below) of any overage if the commercial ACL is exceeded. The Council is considering further reductions in the commercial trip limit in an effort to reduce the harvest rate and increase the length of the commercial season without exceeding the quota, which triggers the in-season closure and leads to additional regulatory discards.

In 2016, the Southeast Data Assessment and Review (SEDAR) 33 update stock assessment for Gulf of Mexico (Gulf) greater amberjack was completed, and reviewed by the Gulf of Mexico Fishery Management Council’s (Council) Scientific and Statistical Committee (SSC) at its March 2017 meeting. The SSC accepted the SEDAR 33 update assessment as the best scientific information available. They also concluded that greater amberjack was still overfished and undergoing overfishing, and the stock would not be rebuilt by 2019 as previously projected. To address this result, the Council completed a framework action (GMFMC 2017) to modify the acceptable biological catch (ABC), sector-specific annual catch limits (ACLs), and annual catch targets (ACTs) for greater amberjack (Table 1.1.1). For greater amberjack, the respective sector ACTs are equal to the quota. The final rule implementing this change was effective January 27, 2018.

Table 1.1.1. Greater amberjack commercial ACL and ACT established in 2017 (GMFMC 2017) based on the SEDAR 33 update assessment (2016) in pounds whole weight (ww).

| Fishing year | ACL (lbs ww) | ACT (lbs ww) |
|---------------------|---------------------|---------------------|
| 2018 | 319,140 | 277,651 |
| 2019 | 402,030 | 349,766 |
| 2020+ | 484,380 | 421,411 |

Source: GMFMC 2017 “lbs” = pounds; “ww” = whole weight

Landings:

No harvest catch limit was established for gulf greater amberjack until the implementation of a soft quota in Secretarial Amendment 2 (GMFMC 2002). The goal of this measure was to manage greater amberjack with a combined recreational and commercial quota but not implement any in-season closures if the quota was met or exceeded. In 2008, Amendment 30A established sector-specific catch limits and accountability measures (AM) for Gulf greater amberjack (GMFMC 2008). Amendment 30A required any annual harvest exceeding either the recreational or commercial ACL be deducted from the applicable sector ACT in the subsequent calendar year (Table 1.1.2). Any overage adjustments for the commercial sector are made on preliminary landings, as final landings are not completed by the beginning of the subsequent calendar year. This may result in minor deviations from the final overage (if any) and the overage deduction. Additionally, Amendment 30A required an in-season closure of the commercial fishery if the ACT was met or projected to be met.

Table 1.1.2. Summary of commercial landings relative to management targets (lbs ww) for 2008 through 2018. This time period covers the recent commercial closures for greater amberjack in the Gulf.

| Year | Landings | ACT | Adjusted ACT | ACT % | ACL | Adjusted ACL | ACL % | Closure Date |
|-------|----------|---------|--------------|-------|---------|--------------|-------|--------------|
| 2008 | 440,936 | 503,000 | | 87.7 | | | NA | |
| 2009 | 601,446 | 503,000 | | 119.6 | | | NA | 11/7/2009 |
| 2010 | 534,095 | 503,000 | 373,072 | 143.2 | | | NA | 10/28/2010 |
| 2011 | 508,871 | 503,000 | 342,091 | 148.8 | | | NA | 6/18/2011 |
| 2012 | 308,334 | 409,000 | 237,438 | 129.9 | 481,000 | 237,438 | 129.9 | 3/1/2012 |
| 2013 | 457,879 | 409,000 | 338,157 | 135.4 | 481,000 | 410,157 | 111.6 | 7/1/2013 |
| 2014 | 482,277 | 409,000 | | 119.0 | 481,000 | | 101.3 | 8/25/2014 |
| 2015 | 460,670 | 409,000 | | 112.4 | 481,000 | | 95.8 | 7/19/2015 |
| 2016 | 437,390 | 394,740 | | 110.8 | 464,400 | | 94.2 | 7/17/2016 |
| 2017 | 454,561 | 394,740 | | 115.1 | 464,400 | | 97.9 | 6/20/2017 |
| 2018* | 331,403 | 277,651 | | 119.4 | 319,140 | | 103.8 | 4/3/2018 |
| 2019* | 292,278 | 349,766 | 337,503 | 86.6 | 402,030 | 33389,767 | 75.0 | ** |

Source: Southeast Fisheries Science Center commercial (10/23/18) ACL dataset. *2018 and 2019 data are preliminary including the 2019 adjusted ACT and ACL. Data presented for 2019 is through 3/11/19.

Annual commercial greater amberjack landings have varied between the Gulf states since 2000 (Table 1.1.3). Florida has consistently landed the highest percentage of the commercial harvest since 2000 with a time series average of 299,757 lbs ww. Louisiana and Texas have alternated as the state with the second-most commercial landings with Texas reporting more landings than Louisiana from 2007 through 2010. Overall, Louisiana has a larger time series average in commercial landings (155,931 lbs ww) relative to Texas (74,751 lbs ww). Combined, Alabama and Mississippi landings have increased since 2013 with an average of 30,518 lbs ww over the time series.

Table 1.1.3 Annual Gulf greater amberjack commercial landings (lbs ww) for Texas (TX), Louisiana (LA), Mississippi (MS), Alabama (AL), and western Florida (FL) since 2000. Percent contribution to total landings by state for each year is reported in parentheses. Observed minimum and maximum annual landings for each state through 2017 are bolded. Annual and average landings for Mississippi and Alabama are combined to account for confidential data.

| Year | TX | LA | MS/AL | FL | Total |
|---------|-----------------------|-----------------------|-----------------------|-----------------------|---------|
| 2000 | 111,526 (14.2) | 205,796 (26.2) | 8,517 (1.1) | 459,840 (58.5) | 785,679 |
| 2001 | 56,878 (9.4) | 217,314 (35.9) | 5,516 (0.9) | 325,577 (53.8) | 605,285 |
| 2002 | 70,671 (10.0) | 259,687 (36.9) | 6,217 (0.9) | 366,728 (52.1) | 703,303 |
| 2003 | 74,146 (8.7) | 320,101 (37.3) | 9,367 (1.1) | 453,511 (52.9) | 857,125 |
| 2004 | 38,122 (4.4) | 406,521 (46.7) | 5,648 (0.6) | 420,725 (48.3) | 871,016 |
| 2005 | 59,282 (9.0) | 162,346 (24.5) | 5,035 (0.8) | 435,622 (65.8) | 662,285 |
| 2006 | 88,479 (15.6) | 117,563 (20.8) | 3,835 (0.7) | 356,507 (62.9) | 566,384 |
| 2007 | 183,175 (31.1) | 92,407 (15.7) | 9,380 (1.6) | 304,273 (51.6) | 589,235 |
| 2008 | 88,792 (20.1) | 78,748 (17.9) | 7,506 (1.7) | 265,890 (60.3) | 440,936 |
| 2009 | 138,689 (23.1) | 137,802 (22.9) | 23,600 (3.9) | 301,355 (50.1) | 601,446 |
| 2010 | 191,207 (35.8) | 73,975 (13.9) | 16,064 (3.0) | 252,849 (47.3) | 534,095 |
| 2011 | 115,311 (22.7) | 122,484 (24.1) | 9,075 (1.8) | 262,001 (51.5) | 508,871 |
| 2012 | 33,954 (11.0) | 85,367 (27.7) | 16,750 (5.4) | 172,263 (55.9) | 308,334 |
| 2013 | 28,978 (6.3) | 155,030 (33.9) | 25,728 (5.6) | 248,143 (54.2) | 457,879 |
| 2014 | 55,754 (11.6) | 116,552 (24.2) | 79,319 (16.4) | 230,652 (47.8) | 482,277 |
| 2015 | 32,622 (7.1) | 130,258 (28.3) | 89,096 (19.3) | 208,694 (45.3) | 460,670 |
| 2016 | 25,133 (5.7) | 127,598 (29.2) | 86,086 (19.7) | 198,573 (45.4) | 437,390 |
| 2017 | 21,029 (4.6) | 112,934 (24.8) | 106,646 (23.5) | 213,952 (47.1) | 454,561 |
| 2018* | 6,523 (2.0) | 40,198 (12.1) | 66,448 (20.1) | 218,234 (65.9) | 331,403 |
| Average | 74,751 | 155,931 | 30,518 | 299,757 | - |

Source: Southeast Fisheries Science Center commercial (10/23/18) ACL dataset. *2018 data are preliminary.

1.2 Purpose and Need

The purpose of this framework action is to modify the greater amberjack commercial trip limit.

The need for this framework action is to extend the greater amberjack commercial fishing season by constraining harvest rate while continuing to prevent overfishing and rebuild the greater amberjack stock.

1.3 History of Management

The Reef Fish Fishery Management Plan (Reef Fish FMP) (with environmental impact statement [EIS]) was implemented in November 1984. The original list of species included in the management unit consisted of snappers, groupers, and sea basses. Gray triggerfish and *Seriola* species, including greater amberjack, were in a second list of species included in the fishery, but not in the management unit. The species in this list were not considered to be target species because they were generally taken incidentally to the directed fishery for species in the management unit. Their inclusion in the Reef Fish FMP was for purposes of data collection, and their take was not regulated. The following history of management focuses on the commercial sector for greater amberjack.

Amendment 1 (with environmental assessment [EA]), implemented in 1990, added greater amberjack and lesser amberjack to the list of species in the management unit. It set a commercial minimum size limit of 36 inches FL. This amendment's objective was to stabilize the long-term population levels of all reef fish species. A framework procedure for specification of total allowable catch (TAC) was created to allow for annual management changes. This amendment also established a commercial vessel reef fish permit as a requirement for harvest in excess of the bag limit and for the sale of reef fish.

Amendment 4 (with EA), implemented in 1992, added banded rudderfish and almaco jack to the management unit and established a moratorium on the issuance of new commercial reef fish vessel permits for a maximum period of 3 years.

Amendment 5 (with supplemental EIS), implemented in 1994, 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 15 (with EA), implemented in 1998, closed the commercial harvest of greater amberjack in the Gulf during the months of March, April, and May.

Regulatory Amendment (with EA), implemented in 1999, closed two areas (i.e., created two marine reserves), 115 and 104 square nautical miles respectively, year-round to all fishing under the jurisdiction of the Council with a 4-year sunset clause.

Generic Sustainable Fisheries Act Amendment (with EA), partially approved and implemented in 1999, set the maximum fishing mortality threshold (MFMT) for greater amberjack at the fishing mortality necessary to achieve 30% of the unfished spawning potential ratio (SPR) $F_{30\% SPR}$. Estimates of maximum sustainable yield (MSY), minimum stock size threshold (MSST), and optimum yield (OY) were disapproved because they were based on SPR proxies rather than biomass-based estimates.

Secretarial Amendment 2 (with EIS), implemented in 2003, specified MSY for greater amberjack as the yield associated with $F_{30\% SPR}$ (proxy for F_{MSY}) when the stock is at equilibrium, OY as the yield associated with an $F_{40\% SPR}$ when the stock is at equilibrium, MFMT equal to

$F_{30\%SPR}$, and $MSST$ equal to $(1-M)*B_{MSY}$ (where M = natural mortality) or 75% of B_{MSY} . It also set a rebuilding plan limiting the harvest to 2,900,000 lbs for 2003-2005, 5,200,000 lbs for 2006-2008, 7,000,000 lbs for 2009-2011, and for 7,900,000 lbs for 2012. This was expected to rebuild the stock in seven years. Regulations implemented in 1997 and 1998 (Amendments 12 and 15 to the Reef Fish FMP) were deemed sufficient to comply with the rebuilding plan so no new regulations were implemented.

Amendment 30A (with EIS), implemented in 2008, was developed to stop overfishing of gray triggerfish and greater amberjack. The amendment established ACLs and AMs for greater amberjack and gray triggerfish. For greater amberjack, the rebuilding plan was modified, which included setting a commercial ACT that functions as the quota. Furthermore, it set an in-season AM where if the ACT was met or projected to be met, the fishing season would close for the rest of the year. **Amendment 30A** also established an allocation for greater amberjack harvest of 73% recreational and 27% commercial.

Amendment 35 (with EA), implemented in 2012 in response to a 2010 update stock assessment, established a new ACL equal to the ABC at 1,780,000 lbs, which was less than the current ACL of 1,830,000 lbs. Reducing the ABC by 18% was expected to end overfishing. The amendment also established a commercial trip limit of 2,000 lbs whole weight (ww) throughout the fishing year.

2015 Framework Amendment (with EA), implemented in 2016 decreased the total ACL from 1,780,000 lbs to 1,720,000 lbs, set the commercial ACL at 464,400 lbs and the commercial ACT at 394,740 lbs, and reduced the commercial trip limit from 2,000 lbs ww to 1,500 lbs gw.

2017 Framework Amendment (with EA), was implemented in 2017. The commercial greater amberjack ACL was set at 319,140 lbs ww for 2018, 402,030 lbs ww for 2019, and 484,380 lb ww for 2020 and subsequent fishing years. The commercial greater amberjack ACT was set at 277,651 lbs ww for 2018, 349,766 lbs ww for 2019, and 421,411 lbs ww for 2020 and subsequent fishing years. In addition, this framework established a new rebuilding timeframe, which ends in 2027.

2017 Framework Amendment (with EA), was implemented in 2018. This amendment modifies the recreational fishing year to begin on August 1 and run through July 31 of the following year. It also modifies the recreational season so that it's closed from January 1 – April 30, June 1 – July 31, and November 1 – December 31. This final rule is effective April 30, 2018.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 – Modify the Greater Amberjack Commercial Trip Limit

Alternative 1: No Action – Do not modify the current commercial trip limit of 1,500 lbs gutted weight (gw) (1,560 lbs whole weight [ww]).

Alternative 2: Reduce the commercial trip limit to 1,000 lbs gw (1,040-lbs ww).

Alternative 3: Reduce the commercial trip limit to 750 lbs gw (780-lbs ww).

Alternative 4: Reduce the commercial trip limit to 500 lbs gw (520-lbs ww).

Alternative 5: Reduce the commercial trip limit to 250 lbs gw (260-lbs ww).

Discussion:

The commercial trip limit is a limit on the amount of greater amberjack that may be possessed on board or landed, purchased, or sold from a vessel per day. A person who fishes in the exclusive economic zone (EEZ) may not combine a trip limit with any trip or possession limit applicable to state waters. Greater amberjack taken in the EEZ may not be transferred at sea, regardless of where such transfer takes place. Commercially harvested greater amberjack are typically landed gutted rather than whole. As such, the management alternatives are stated in gutted weight with equivalent whole weight conversions noted in parentheses.

Prior to 2013, there was no commercial trip limit. In 2013, a 2,000-lb ww (1,923-lb gw) trip limit was implemented to slow the rate of harvest and attempt to extend the commercial fishing season (GMFMC 2012). In 2016, the trip limit was further reduced to 1,500 lbs gw (1,560 lbs ww) in an additional effort to extend the season (GMFMC 2015). Few commercial fishermen target greater amberjack and landings primarily occur while fishermen are targeting other reef fish species. Most trips land less than 500 lbs gw (Figure 2.1.1). The trip limit on average, and the implementation of trip limits, have not affected this pattern for the majority of vessels; however, it has affected a small percentage of trips that were likely targeting greater amberjack and harvested greater than 10,000 lbs gw per trip (Figure 2.1.2). While these actions have had little overall impact on average landings per trip, the commercial sector has consistently reached or exceeded its ACL prior to the end of the fishing season, thus requiring in-season closures (Table 1.1.2). In some years, the ACL overages were deducted from the ACL in the subsequent fishing year (Table 1.1.2). The commercial season for greater amberjack has closed before the end of the fishing year each year since 2009 (Table 1.1.2).

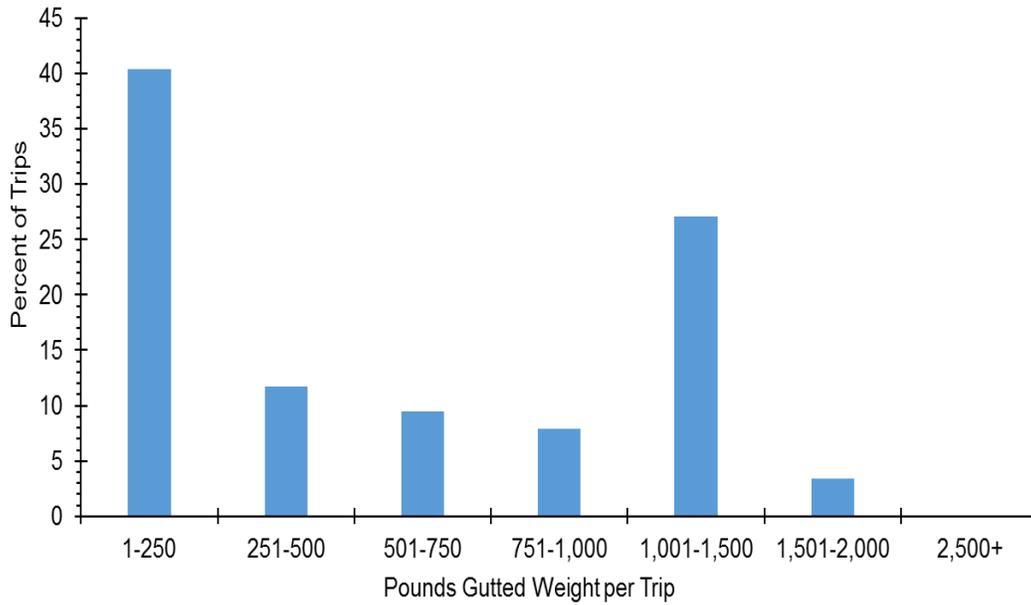


Figure 2.1.1. Percent frequency of observed commercial greater amberjack harvest (lbs gw) per trip from 2016 through 2018. Source: Southeast Fisheries Science Center (SEFSC) logbook data as of February 27, 2019 (n = 1,752 trips). Logbook data for 2018 are not complete.

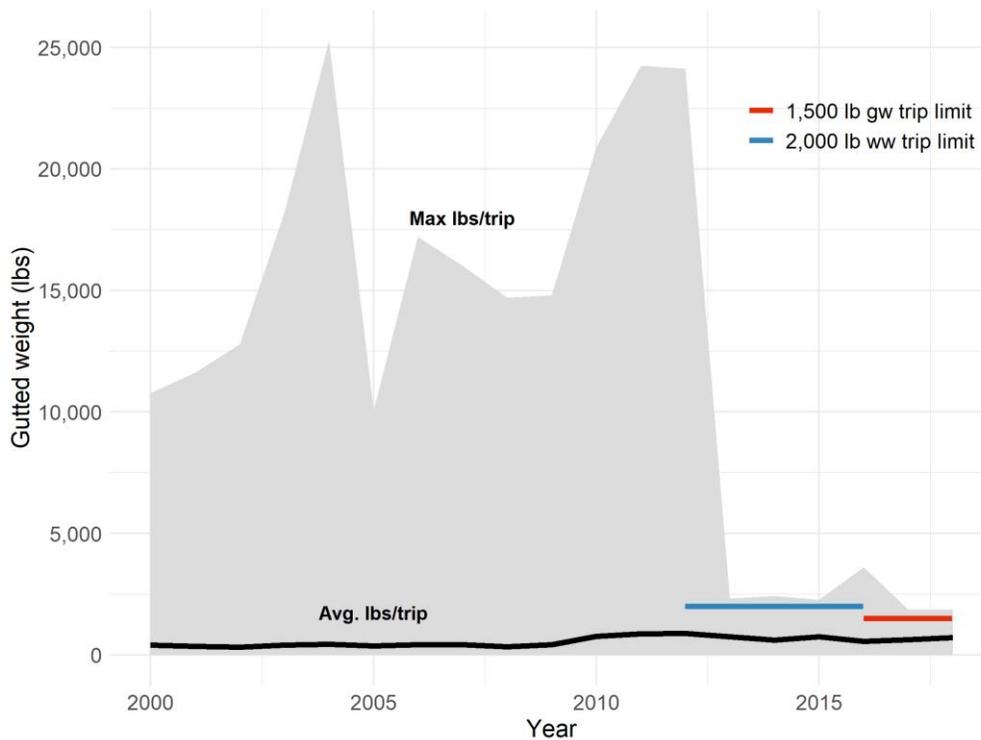


Figure 2.1.2. Mean pounds per trip (gw) of landed greater amberjack (black line) from 2000 through 2018. Gray shaded area indicates range of landings. Dark blue (2,000 lb ww) and red (1,500 lb gw) lines indicate the implementation of trip limits. Source: Southeast Fisheries Science Center commercial (10/23/18) ACL dataset. * 2018 data are preliminary.

The current trip limit (**Alternative 1**) is 1,500 lbs gw (1,560 lbs ww) and was implemented on January 4, 2016. Available logbook data from 2016, 2017, and 2018 were analyzed to determine the distribution of catch per trip after the 1,500 lbs gw trip limit was implemented. The majority of trips harvesting greater amberjack land less than 500 lbs gw per trip (Figure 2.1.1). Approximately 27% of trips harvested between 1,000 and 1,500 lbs gw, suggesting that some commercial harvest up to the allowable trip limit.

Alternatives 2-5 would reduce the commercial trip limit. To examine the effect of reduced trip limits on the commercial season, a trip limit analysis was completed using historical trip data from 2016, 2017, and 2018. For this analysis, historical trips harvesting greater than 1,000 lbs gw (**Alternative 2**), 750 lbs gw (**Alternative 3**), 500 lbs gw (**Alternative 4**), or 250 lbs gw (**Alternative 5**) were adjusted to reflect each alternative trip limit value. This was done to assess the predicted percent reduction in harvest per trip for each alternative relative to the current 1,500 lbs gw trip limit. Details of this analysis are in Appendix A. The resulting number of days required to harvest the quota was calculated for each trip limit alternative. This procedure followed the same methods used previously to consider trip limits for greater amberjack (GMFMC 2012, GMFMC 2015), but the current analyses were based on the most recent data available. **Alternative 2** is expected to reduce commercial landings on a per trip basis by 17.8%, **Alternative 3**, by 31.8%, **Alternative 4**, by 49.3%, **Alternative 5**, by 70.6% (Table 2.1.1).

Table 2.1.1. Predicted percent reductions in commercial harvest per trip for Gulf greater amberjack for **Alternatives 1-5**. The current trip limit is 1,500 lbs gw.

| Trip limit (lbs gw) | Predicted Percent reduction |
|----------------------|-----------------------------|
| Alternative 1: 1,500 | 0 |
| Alternative 2: 1,000 | 17.8 |
| Alternative 3: 750 | 31.8 |
| Alternative 4: 500 | 49.3 |
| Alternative 5: 250 | 70.6 |

Source: Commercial logbook dataset for 2016 through 2018; 2018 data are not complete.

Commercial fishing for greater amberjack opens January 1 each year with a fixed closed season from March 1 through May 31. The fishery re-opens June 1 and is closed when the quota is met or projected to be met. Based on the quota for 2020 and beyond, **Alternative 1** is expected to result in a 85-day fishing season (Table 2.1.2). **Alternatives 2-5** would be expected to increase the commercial fishing season (Table 2.1.2). **Alternative 5** could provide the longest season of the options under consideration since the commercial fishery is expected to be open the entire year except for the fixed March 1 through May 31 closure (273 day season). Thus, **Alternative 5** is expected to reduce the harvest rate sufficiently to avoid an in-season closure prior to the end of the calendar (fishing) year (Table 2.1.2). Data from the SEFSC Trip Interview Program collected from 2012 through 2018 indicates individual greater amberjack weight sampled from 2,932 trips ranged between 9 to 109 lbs ww. **Alternative 5** would allow for a harvest number of 2-28 fish per trip.

This forecasted season length analysis attempted to predict realistic changes to the landings from the various trip limit options presented in this framework action. Estimated closure dates are when the 2020+ quota of 421,411 lbs ww is projected to be harvested. For **Alternative 5**, no in-season closure is expected and an estimated 72% of the ACT would be harvest during the fishing season. Uncertainty exists in these projections, 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 this prediction. Additionally, it is possible that a trip limit option between 250 and 500 lbs gw may still achieve an extended season with no in-season closure and allow annual commercial landings greater than 72% of the quota, as is predicted if the 250-lb gw trip limit is implemented. However, similar to the forecasted seasonal closures, uncertainty in estimating future annual commercial landings totals exist and these potential variabilities should also be taken into consideration.

Table 2.1.2. Greater amberjack commercial sector predicted closure dates for **Alternatives 1-5**. “Number of days open” is the total number of days open for greater amberjack commercial harvest for the fishing year.

| Trip limit (lbs gw) | Estimated closure date | Number of days open |
|----------------------------|-------------------------------|----------------------------|
| Alternative 1: 1,500 | June 27 | 85 |
| Alternative 2: 1,000 | July 21 | 109 |
| Alternative 3: 750 | August 19 | 138 |
| Alternative 4: 500 | October 23 | 203 |
| Alternative 5: 250 | None (72% ACT) | 273 |

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APPENDIX A. COMMERCIAL TRIP LIMIT ANALYSIS FOR GULF GREATER AMBERJACK

The Gulf of Mexico Fishery Management Council is considering changes to commercial trip limits in a framework action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP). The first step in analyzing the impact of changes to the trip limit is to review the available data. Greater Amberjack landings data from the Coastal Fisheries Logbook Program (logbook) were provided from the Southeast Fisheries Science Center on February 27, 2019. On January 4, 2016 a framework action to the FMP reduced the trip limit from 2,000 pounds whole weight (lbs ww) down to 1,500 pounds gutted weight (lbs gw). Since there was a change to the trip limit in early 2016 only data from 2016, 2017, and 2018 were examined (Figure A-1).

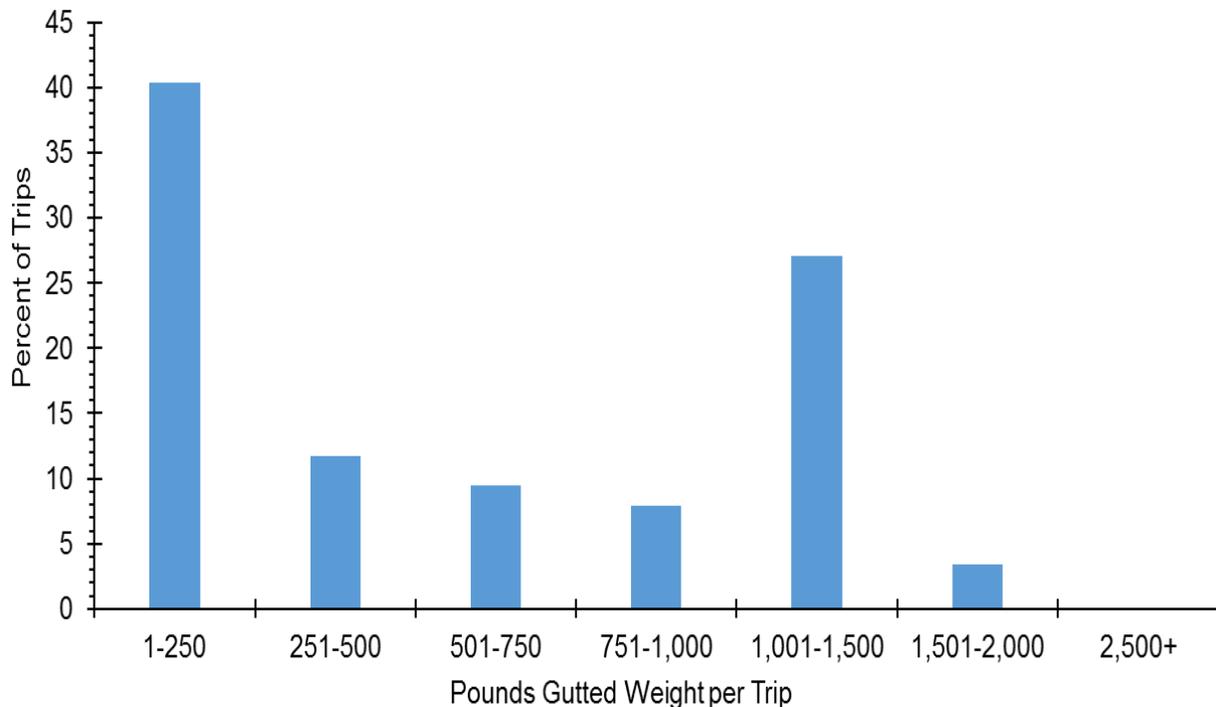


Figure A-1. Percent frequency of observed commercial greater amberjack harvest (lbs gw) per trip from 2016 through 2018. During this time period, there was a total of 1,752 trips reported.

Trip Limit Analysis

The current framework action is proposing to reduce the trip limit from 1,500 lbs gw down to 1,000, 750, 500, or 250 lbs gw. The impact to the landings from reducing the trip limit was calculated by limiting trips in previous years (2016 to 2018) to newly proposed trip limits. For example, if analyzing the reduction down to the 500 lbs gw trip limit, a trip with 800 pounds would be reduced to 500 pounds. Estimated reductions were calculated based on the difference in landings with no trip limit change (current trip limit of 1,500 lbs gw) compared to landings when a decreased trip limit was imposed. These reductions were converted to percentages based on the total harvest from previous years (Table A-1).

Table A-1. Percent decreases in landings per trip for various commercial greater amberjack commercial trip limits proposed in the framework action. Data were generated from logbook data in the years of 2016, 2017, and 2018.

| Trip limit (lbs gw) | Percent reduction |
|----------------------------|--------------------------|
| Alternative 1: 1500 | 0 |
| Alternative 2: 1,000 | 17.8 |
| Alternative 3: 750 | 31.8 |
| Alternative 4: 500 | 49.3 |
| Alternative 5: 250 | 70.6 |

Predicting Closure Dates

The Gulf of Mexico greater amberjack commercial sector exceeded the annual catch target (ACT) in 2016, 2017, and 2018. The current framework action is considering reducing the trip limit with the intent of decreasing the rate of landings. The purpose of reducing the rate of landings is to keep the landings below the ACT and avoid an in-season closure. The commercial sector has had an in-season closure every year since 2009 with closures occurring as early as March 1 and as late as November 7. To capture recent trends in landings the average monthly commercial landings in January and February for 2016, 2017, and 2018 were used as a proxy for future January and February landings. The stock has had a March through May closure for more than a decade and this closure will continue in the future. Therefore, March through May landings were assumed to be zero. Since the stock has had numerous closures in the months of June through December the predicted landings for these months came from SERO-LAPP-2014-09. This report conducted an analysis of historic greater amberjack commercial landings and made a prediction of June through December landings. Figure A-2 shows the predicted landings for the Gulf of Mexico greater amberjack commercial sector.

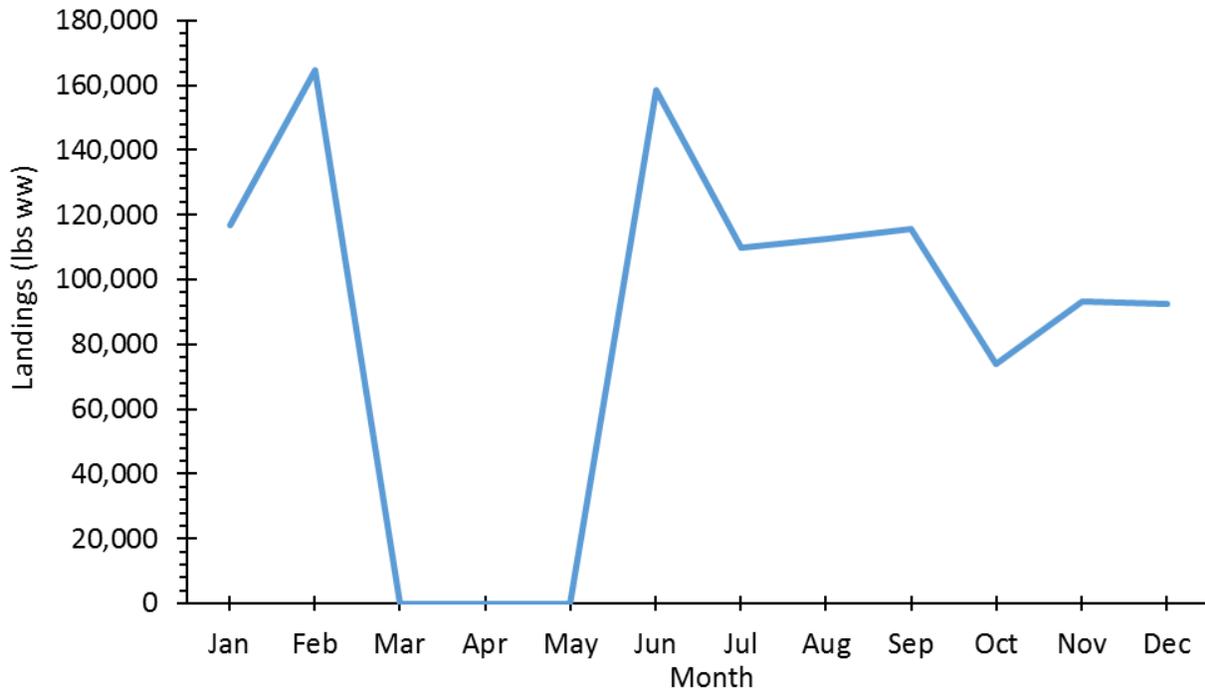


Figure A-2. Predicted commercial landings for Gulf of Mexico greater amberjack. The fishery is closed March 1 to May 31.

The predicted commercial landings (Figure A-2) were combined with the estimated percent reductions (Table A-1) to determine when the commercial sector’s ACT will be met. The commercial sector ACT for 2020 and beyond is 421,411 lbs ww, and predicted closure dates are shown in Table A-2. No in-season closure is estimated for a 250 lbs gw trip limit, while a June 27 closure is estimated if the trip limit is left at the current 1,500 lbs gw value.

Table A-2. Gulf of Mexico greater amberjack commercial sector predicted closure dates for different trip limits. Closure dates are when the 2020+ ACT of 421,411 lbs ww is predicted to be met. For Alternative 5, no in-season closure is expected and an estimated 72% of the ACT would be harvest during the fishing season.

| Trip limit (lbs gw) | Estimated closure date | Days open |
|----------------------|------------------------|-----------|
| Alternative 1: 1,500 | June 27 | 85 |
| Alternative 2: 1,000 | July 21 | 109 |
| Alternative 3: 750 | August 19 | 138 |
| Alternative 4: 500 | October 23 | 203 |
| Alternative 5: 250 | None (72% ACT) | 273 |

This analysis attempted to predict realistic changes to the landings from the various trip limit options presented in the framework action. Uncertainty exists in these projections, 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 this assumption. In addition to the aforementioned sources of uncertainty, the modeled reductions associated with

management measures assume that past performance in the fishery is a good predictor of future dynamics. An attempt was made to constrain the range of data considered to recent years to reduce the unreliability of this assumption.

Reference

SERO-LAPP-2014-09. 2014. Modeling the combined effects of Gulf framework action proposed management for commercially and recreationally caught greater amberjack.