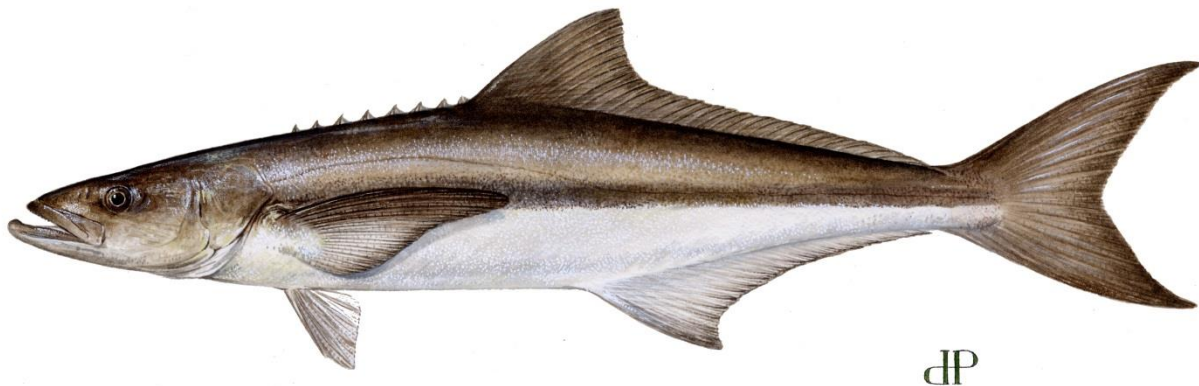


Modifications to Gulf of Mexico Migratory Group Cobia Size and Possession Limits



COBIA

Rachycentron canadum

Decision Document Gulf Mackerel Advisory Panel Meeting October 2018



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MANAGEMENT ALTERNATIVES

Action 1: Modify the Minimum Size Limit for the Gulf of Mexico Migratory Group Cobia

Alternative 1: No Action – Do not change the current recreational and commercial 33-inch fork length (FL) minimum size limit for the Gulf of Mexico (Gulf) migratory group of cobia (Gulf cobia) in the Gulf of Mexico Fishery Management Council’s (Gulf Council) jurisdictional area.

Preferred Alternative 2: Increase the recreational and commercial minimum size limit for Gulf cobia to 36 inches FL in the Gulf Council’s jurisdictional area.

Alternative 3: Increase the recreational and commercial minimum size limit for Gulf cobia to 39 inches FL in the Gulf Council’s jurisdictional area.

Alternative 4: Increase the recreational and commercial minimum size limit for Gulf cobia to 42 inches FL in the Gulf Council’s jurisdictional area.

Discussion:

Gulf cobia have been managed with a 33-inch FL minimum size limit since the implementation of the original Fishery Management Plan (FMP) for Coastal Migratory Pelagic Resources (CMP) in the Gulf of Mexico and Atlantic Regions (CMP FMP) in 1983 (GMFMC and SAFMC 1983). This minimum size limit is commensurate with those in other parts of the world with both recreational and commercial fishing pressure, including the Atlantic migratory group of cobia (Atlantic cobia; GMFMC and SAFMC 1985) and Australia (750 mm total length [29.5 inches]; Fry and Griffiths 2010). Unfortunately, detailed data on size or age at maturity for cobia in the Gulf are sparse, resulting in insufficient data to provide reliable estimates (SEDAR 28 2013; references therein).

The purpose of this amendment is to reduce fishing mortality on Gulf cobia in response to concerns that harvest rates are decreasing in waters under the Gulf Council’s jurisdiction (Gulf Zone). Decreasing the minimum size limit would be expected to result in increased landings by allowing the retention of cobia which are currently being released, thereby increasing fishing mortality compared with **Alternative 1**. Therefore, decreasing the minimum size limit is not being considered in this action. Increasing the minimum size limit would reduce fishing mortality in two ways: by increasing the minimum size, anglers would release cobia that they would otherwise retain under the current regulations (**Alternative 1**); and raising the minimum size limit would increase the probability of a fish reproducing, perhaps more than once, before being selected by the fishery. Changes to average weight from 2010-2017 show the average weight in the commercial sector going up in 2013 and then down in 2017; there has also been a slight decline (13% decline from 2011 to 2017) in average weight for the recreational sector in recent years (Figure 2.1.1).

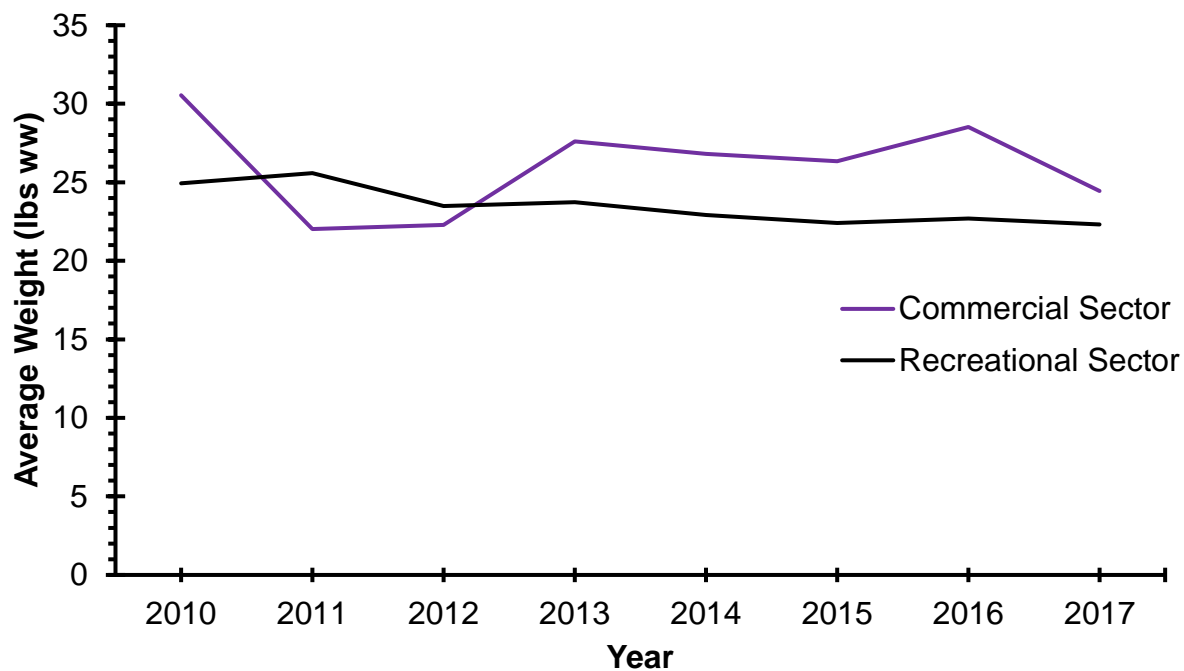


Figure 2.1.1. Annual average weight of cobia in the Gulf of Mexico (Texas through west Florida) for commercial and recreational sectors.

The number of discards could have an impact on Gulf cobia in the Gulf Zone. Annual Gulf cobia discards from the Gulf recreational sector are plotted in Figure 2.1.2. No discard estimates are available for the Gulf Zone commercial sector, which typically accounts for less than 10% of total Gulf cobia landings.

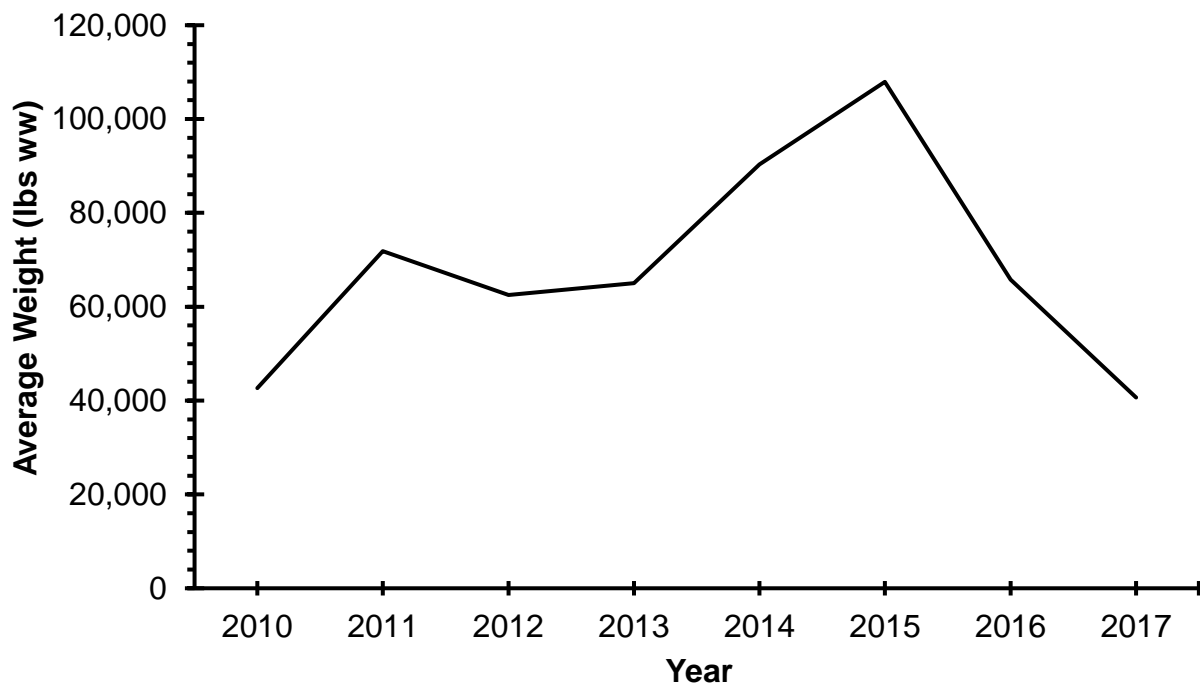


Figure 2.1.2. Total discards of cobia in the Gulf of Mexico (Texas through west Florida) by year for the recreational sector. Discard estimates are only available from MRIP.

The size distribution of cobia harvested in the Gulf Zone for the commercial and recreational sectors is summarized for the recent years of 2015 through 2017 in Figure 2.1.3. An analysis of the data showed that, overall, the commercial and charter modes harvested larger cobia than the headboat and private angling modes.

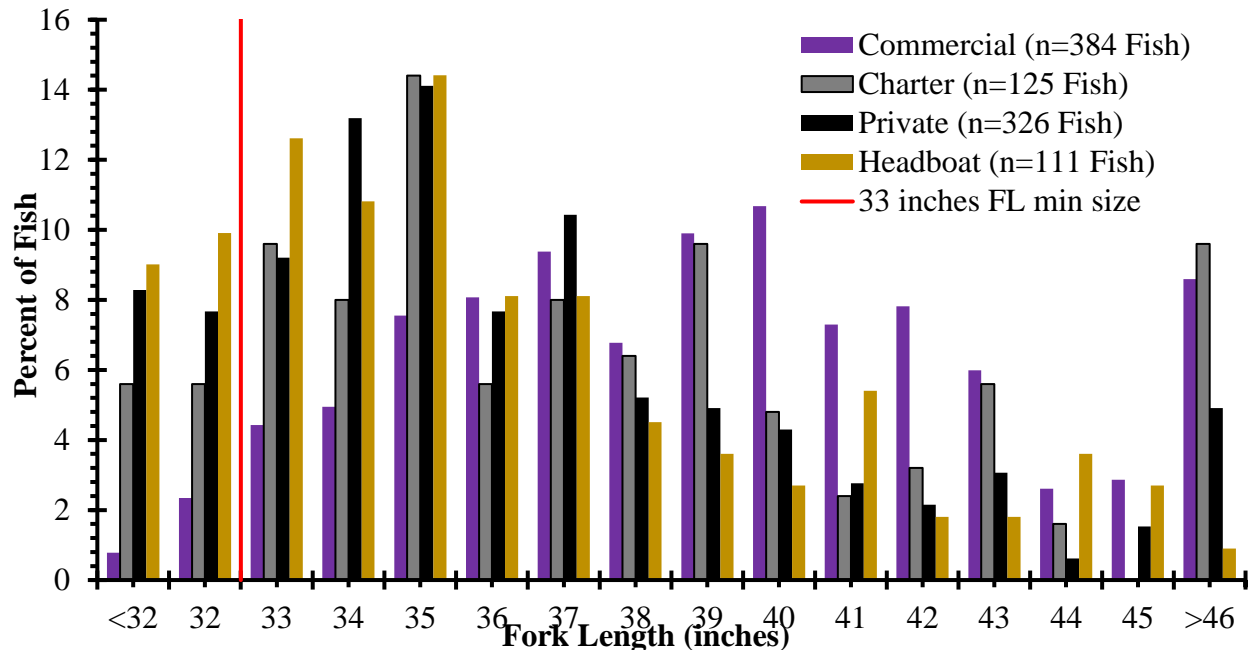


Figure 2.1.3. Size distribution of cobia landed in the Gulf of Mexico (Texas through west Florida) by mode. Right of the red line is the current minimum size limit (33 inches FL). Data are from 2015 through 2017. Source: SERO-TIP, MRIP, SRHS, LA Creel, and TPWD.

The different recreational modes (charter, headboat, private angling) have different catch rates and different length distributions of cobia. Therefore, to determine the impact on the recreational sector from the different alternatives, the estimated changes to landings were performed by mode and then weighted by the percent each mode contributed to the total landings. Table 2.1.1 provides the total and percentage of Gulf cobia landings by mode in the recent years of 2015 – 2017.

Table 2.1.1. Gulf of Mexico (Texas through west Florida) cobia recreational landings from 2015 through 2017 by mode and the percentage of total recreational landings.

Charter		Headboat		Private Angling	
Landings	Percent	Landings	Percent	Landings	Percent
469,068	19.7	48,102	2.0	1,858,712	78.2

Reductions in harvest weight were calculated for minimum size limits (MSL) at 1-inch intervals between 33 and 42 inches FL as follows:

Percent reduction = $((C - G) - B)/C$, where:

C = catch in pounds ww

G = weight of fish that are greater than or equal to the MSL

B = weight of fish smaller than the 33-inch FL MSL (non-compliance or measurement error)

Percent reductions associated with minimum size limits were normalized to a 0% reduction at the status quo of 33 inches FL (**Alternative 1**). Due to concerns about low sample sizes, the output was pooled for 2015 – 2017 data. Table 2.1.2 provides the estimated reduction in landings for both the commercial and recreational sectors for the alternatives in Action 1.

Table 2.1.2. Estimated percent reduction in landings for the proposed alternatives of Action 1.

Alternative	Size Limit (Inches FL)	% Reduction	
		Commercial	Recreational
Alternative 1 (No Action)	33	0.0	0.0
Preferred Alternative 2	36	10.3	26.1
Alternative 3	39	29.0	47.0
Alternative 4	42	55.9	61.7

Alternative 1 would leave the current recreational and commercial 33-inch FL minimum size limit for Gulf cobia in the Gulf Zone unchanged, and would not be expected to result in any change in the current level of fishing mortality. **Preferred Alternative 2, Alternative 3, and Alternative 4** would increase the recreational and commercial minimum size limit in the Gulf Zone, which would reduce the landings for the recreational and commercial sectors as shown in Table 2.1.2. As the minimum size limit is increased, so increases the predicted reduction in landings for each sector. Comparatively, increases in the minimum size limit result in larger predicted reductions in landings for the recreational sector, since the commercial sector typically lands larger cobia, on average (Figure 2.1.3). The majority of Gulf cobia in the Gulf zone are landed by the recreational sector (Table 1.1.3).

Preferred Alternative 2, Alternative 3, and Alternative 4 would be expected to increase regulatory discards of undersized cobia; however, discarded cobia only have an estimated 5% discard mortality rate (SEDAR 28 2013). Concurrently, those fish which survive being released by anglers may have the opportunity to reproduce multiple times prior to being harvested, depending on which alternative is selected as preferred. The probability of a cobia being able to reproduce more than once before being harvested increases with the size limit, if for no other reason than the time it takes for a cobia to grow to a larger size (SEDAR 28 2013; Figures 2.1.4 and 2.1.5). Further, the larger a cobia is compared to the size at which 50% of cobia (sexes combined) are thought to be mature (presently 33 inches FL), the greater the probability of that particular cobia being sexually mature. Since females have been observed to be larger than males of the same age, an increase in the minimum size limit may also increase the probability of female fish reproducing more so than male fish. The SEDAR 28 (2013) stock assessment estimated a 1:1 ratio of males to females in the Gulf cobia stock.

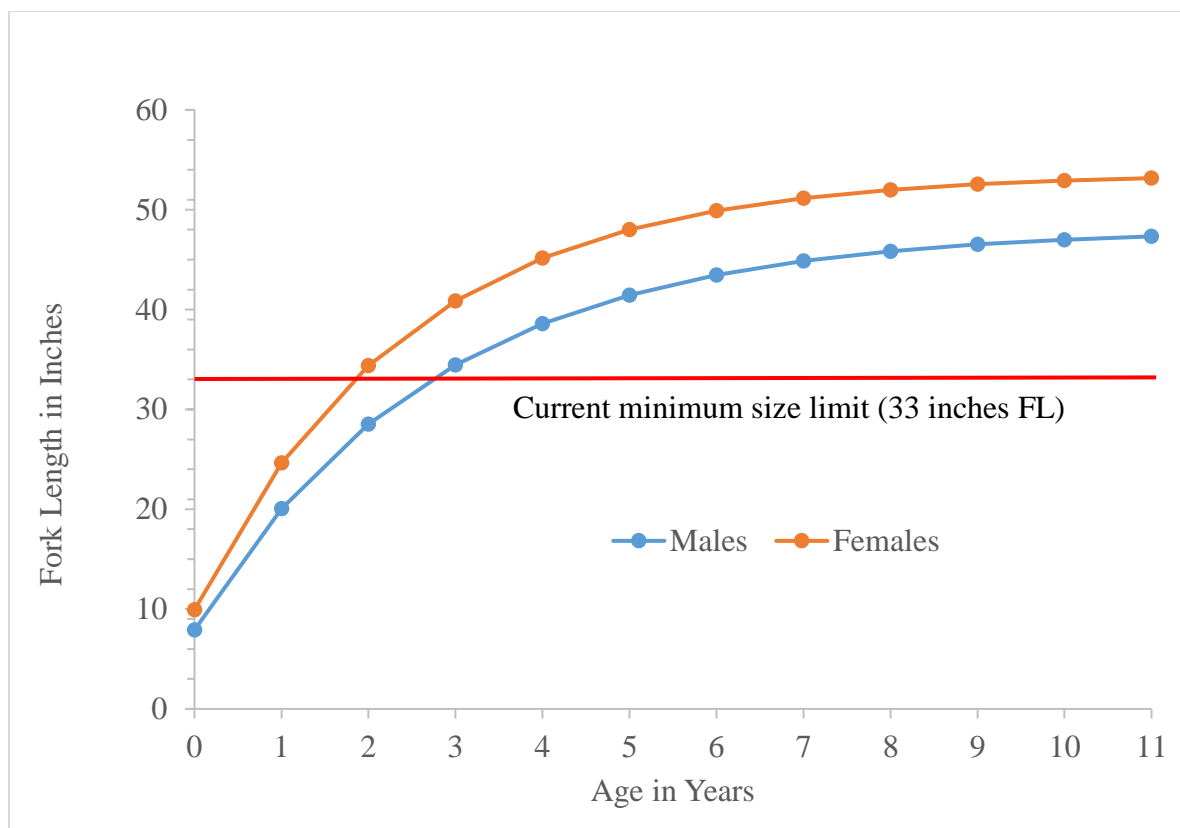


Figure 2.1.4. Gulf cobia sex-specific length-at-age data using von Bertalanffy growth parameters from SEDAR 28 (2013), using the Diaz et al. (2004) correction and inverse weighting by sample size.

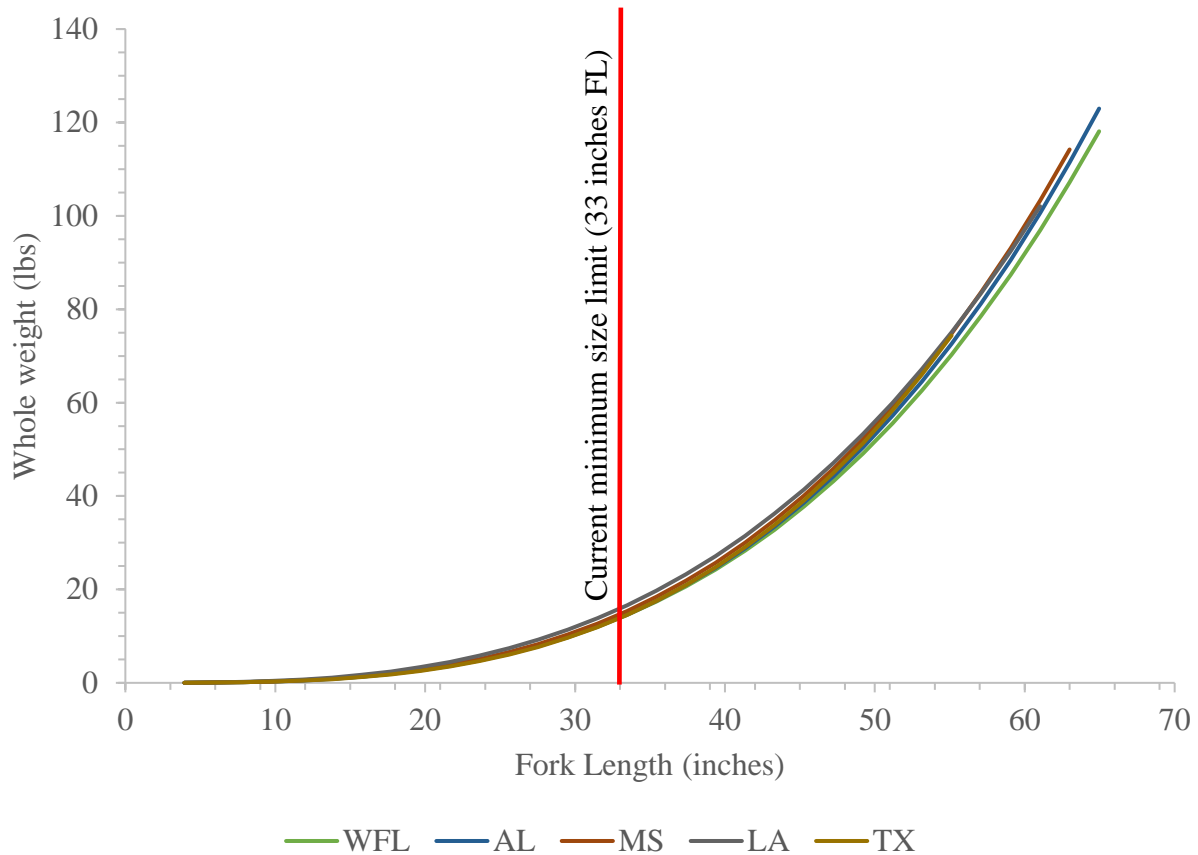


Figure 2.1.5. Gulf cobia length-at-weight data by Gulf state from the SEDAR 58 Stock ID Workshop (2013).

Action 1 would only apply to Gulf cobia within the Gulf Zone, which is shown in Figure 1.1.1. The Gulf Council manages Gulf cobia from Texas east to the Council jurisdictional boundary at the Dry Tortugas to the west of Key West. The South Atlantic Fishery Management Council (South Atlantic Council) manages Gulf cobia east of the Council jurisdictional boundary and north to the Florida – Georgia state line. Atlantic cobia were recommended for removal from the CMP FMP by the Gulf and South Atlantic Councils in CMP Amendment 31 (GMFMC and SAFMC 2018).

Action 2: Modify the Possession Limit for the Gulf Cobia

Alternative 1: No Action – Do not change the current two fish per person daily recreational and commercial possession limit for Gulf cobia.

Preferred Alternative 2: Decrease the per person recreational and commercial possession limit for Gulf cobia to one fish per day.

Preferred Alternative 3: Create a recreational and commercial daily vessel limit for Gulf cobia. Anglers may not exceed the per person possession limit.

Preferred Option 3a: The recreational and commercial daily vessel limit for cobia is two fish.

Option 3b: The recreational and commercial daily vessel limit for cobia is four fish.

Option 3c: The recreational and commercial daily vessel limit for cobia is six fish.

Note: The Gulf Council may select more than one alternative as preferred. Doing so would require anglers to abide by the more restrictive of the resultant regulations.

Discussion:

The daily possession limit for Gulf cobia is currently two fish per person for both sectors, and has been in effect since 1990 (GMFMC and SAFMC 1990). The fishing year for cobia is year-round, with no closed seasons. The Gulf Council is considering pre-emptive options to reduce the fishing mortality on Gulf cobia in the Gulf Zone. Reducing the number of legal-size cobia caught on a fishing trip which may be retained would be expected to reduce overall fishing mortality on Gulf cobia. Fish that are released after capture are assumed to be subject to a 5% discard mortality rate (SEDAR 28 2013). **Alternative 1** would not change the current two fish per person recreational and commercial daily possession limit for Gulf cobia, and would therefore not be expected to result in any change in fishing mortality from the status quo.

To determine the effects of changing the per person possession limits, or the addition of vessel limits, the cobia harvest per person and per vessel on each trip for the Gulf Zone was summarized for 2015 – 2017. This was done for the commercial, charter, private angling, and headboat harvest data. The majority of both commercial and recreational trips harvested less than one cobia per person (Figure 2.2.1). This is possible because the number of anglers exceeds the number of cobia. For example, a trip with four anglers that harvested two cobia would result in less than one cobia per angler (0.5 cobia per angler is this example). Examination of the cobia per vessel data revealed that the majority of the commercial and recreational trips harvested only one cobia per vessel per trip (Figure 2.2.2).

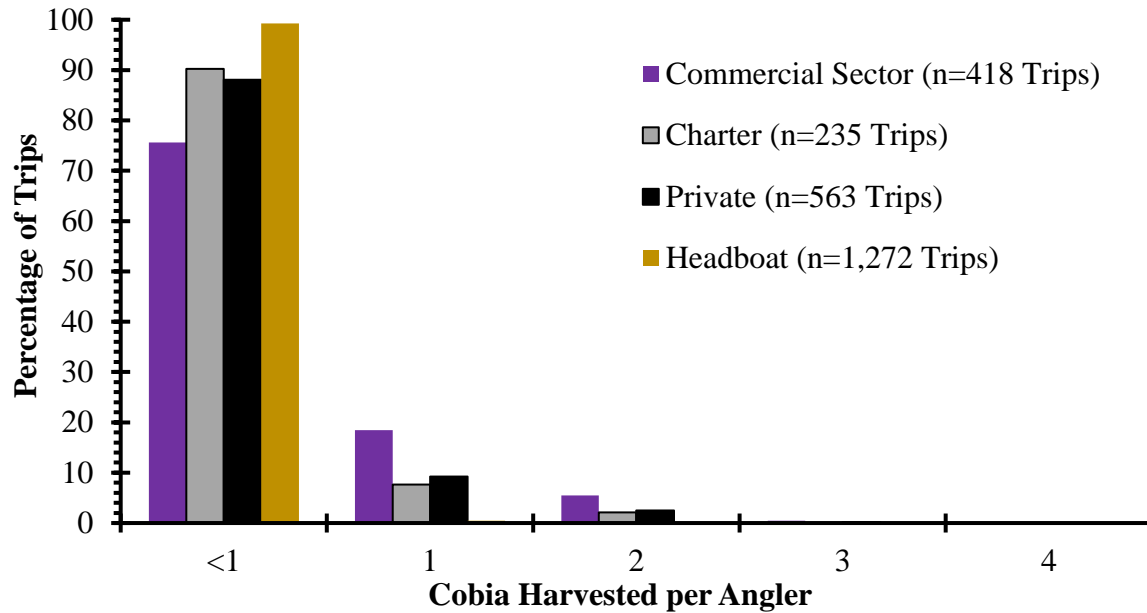


Figure 2.2.1. Number of cobia per angler per trip (expressed as a percentage) landed in the Gulf of Mexico (Texas through west Florida) by mode. Data are from 2015 through 2017. Source: SERO-TIP, MRIP, SRHS, LA Creel, and TPWD.

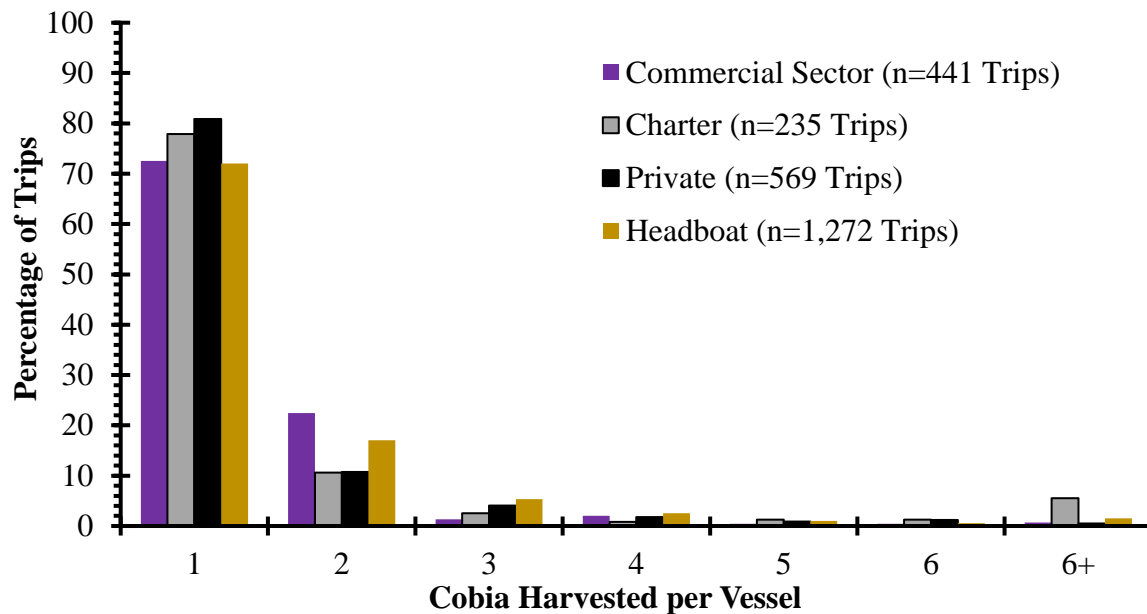


Figure 2.2.2. Number of cobia per vessel per trip (expressed as a percentage) landed in the Gulf of Mexico (Texas through west Florida) by mode. Data are from 2015 through 2017. Source: SERO-TIP, MRIP, SRHS, LA Creel, and TPWD.

The different recreational modes (charter, headboat, private) have different catch rates. Following the method used for the size limit analysis in Section 2.1, the impact on the recreational sector from the alternatives in Action 2 was performed by mode and then weighted by the percent each mode contributed to the total landings. Estimated reductions in landings

were calculated by assuming any trips that exceeded the vessel limit would now meet the vessel limit. For example, imposing a vessel limit of two cobia assumes all trips with more than two cobia per vessel would now only harvest two cobia. Table 2.2.1 provides the estimated reduction in landings for both the commercial and recreational sectors.

Table 2.2.1. Estimated percent reduction in landings for the proposed alternatives of Action 2.

Alternative	% Reduction	
	Commercial	Recreational
Alternative 1 No Action	0.0	0.0
Preferred Alternative 2 , 1 Cobia per Person	6.0	4.0
Preferred Alternative 3a , 2 Cobia per Vessel	5.0	9.1
Alternative 3b, 4 Cobia per Vessel	1.6	3.7
Alternative 3c, 6 Cobia per Vessel	0.7	1.5

Preferred Alternative 2 would decrease the per person daily recreational and commercial possession limit for Gulf cobia in the Gulf Zone to one fish. Since Gulf cobia are managed under a stock ACL with equivalent harvest restrictions for both recreational and commercial anglers, separate possession limits are not currently being considered herein. **Preferred Alternative 2** would halve the maximum possible harvest per person. However, less than one cobia per angler is retained, on average, on trips in the Gulf Zone (Figure 2.2.1), reducing the per person possession limit to one fish per day would likely result in only minimal reductions in fishing mortality (commercial: 6%; recreational: 4%; Table 2.2.1).

Preferred Alternative 3 would create a recreational and commercial daily vessel limit for Gulf cobia of either two fish (**Preferred Option 3a**), four fish (**Option 3b**), or six fish (**Option 3c**) per vessel. Anglers would not be permitted to exceed the per person possession limit. For example, if there are three anglers on a vessel, and the daily possession limit is two fish per person (**Alternative 1**) with a two fish daily vessel limit (**Preferred Alternative 3, Preferred Option 3a**), then the maximum number of cobia that could be retained on that trip for all anglers combined would be two fish, as opposed to six fish in the absence of a daily vessel limit. However, since the preponderance of trips catching cobia average only one fish retained per vessel (Figure 2.2.2), the predicted reductions in harvest from the options in **Preferred Alternative 3** are low.

Combined Effects: Size Limits Combined with Possession and Vessel Limits

More than one alternative and accompanying option may be selected as preferred in Action 2. For example, a daily possession limit of one fish per person (**Preferred Alternative 2**) could be paired with a four fish daily vessel limit (**Alternative 3, Option 3b**). Further, a possession and/or vessel limit could be combined with an increase in the minimum size limit (Section 2.1). More restrictive harvest controls would likely result in larger reductions in fishing mortality. These scenarios were analyzed by combining the effects of the size limit (Section 2.1) with the possession/vessel limit. Tables 2.2.2 through 2.2.4 provide the estimated reductions in landings from combining both size limits with the possession limits.

Table 2.2.2. Estimated percent reduction in landings for a 36-inch FL minimum size limit (Action 1 Alternative 2) combined with the proposed alternatives of Action 2.

Alternative	% Reduction	
	Commercial	Recreational
Alternative 1 No Action	10.3	26.1
Preferred Alternative 2, 1 Cobia per Person	16.3	30.1
Preferred Alternative 3a, 2 Cobia per Vessel	15.3	35.2
Alternative 3b, 4 Cobia per Vessel	11.9	29.8
Alternative 3c, 6 Cobia per Vessel	11.0	27.6

Table 2.2.3. Estimated percent reduction in landings for a 39-inch fork length minimum size limit (Action 1 Alternative 3) combined with the proposed alternatives of Action 2.

Alternative	% Reduction	
	Commercial	Recreational
Alternative 1 No Action	29.0	47.0
Preferred Alternative 2, 1 Cobia per Person	35.0	51.0
Preferred Alternative 3a, 2 Cobia per Vessel	34.0	56.1
Alternative 3b, 4 Cobia per Vessel	30.6	50.7
Alternative 3c, 6 Cobia per Vessel	29.7	48.5

Table 2.2.4. Estimated percent reduction in landings for a 42-inch fork length minimum size limit (Action 1 Alternative 4) combined with the proposed alternatives of Action 2.

Alternative	% Reduction	
	Commercial	Recreational
Alternative 1 No Action	55.9	61.7
Preferred Alternative 2, 1 Cobia per Person	61.9	65.7
Preferred Alternative 3a, 2 Cobia per Vessel	60.9	70.8
Alternative 3b, 4 Cobia per Vessel	57.5	65.4
Alternative 3c, 6 Cobia per Vessel	56.6	63.2

As with most projections, the reliability of the results depends upon the accuracy of the underlying data and input assumptions. Uncertainty exists in this possession/vessel limit analysis, as economic conditions, weather events, changes in catch-per-unit effort, angler response to management regulations, and a variety of other factors may influence the impact from changes to the size limit and possession limit.