Commercial Discard Length Composition for Gulf of Mexico Greater Amberjack

Sarina F. Atkinson

SEDAR70-WP-04

29 May 2020

Please cite this document as:

Atkinson, Sarina F. 2020. Commercial Discard Length Composition for Gulf of Mexico Greater Amberjack. SEDAR70-WP-04. SEDAR, North Charleston, SC. 25 pp.

Commercial Discard Length Composition for Gulf of Mexico Greater Amberjack

Sarina F. Atkinson[1]

05/29/2020

[1]Cooperative Institute for Marine & Atmospheric Studies, Rosenstiel School of Marine & Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149

Corresponding author: sarina.atkinson@noaa.gov

Introduction

The commercial Reef Fish Observer Program (RFOP) and Shark Bottom Longline Observer Program (SBLOP) are managed by the NOAA Fisheries, Southeast Fisheries Science Center (SEFSC). Data from these two programs were used to characterize the length compositions from commercial discards in the Gulf of Mexico (hereafter, the Gulf) for greater amberjack. The observer programs were designed to collect specific catch and bycatch information for selected vessels and information collected includes trip, gear, and geographic characteristics.

The RFOP was implemented as a mandatory program for the Gulf commercial fishery in July 2006 (Scott-Denton et al. 2011). Primary gears observed in this program are bottom longline and vertical line (bandit or handline). The RFOP covers about 4 percent of the bottom longline vessels in the Gulf. The vertical line fishery has about 2 percent observer coverage.

The SBLOP became mandatory in January 2002 in both the South Atlantic and Gulf for bottom longline vessels that hold shark permits (Mathers et al. 2018). However, bottom longline data were available since 2005 when the observer program moved to SEFSC. Prior to 2005, the SBLOP was maintained by the University of Florida (Morgan et al. 2010). For the Gulf, vessel selection limited to western Florida.

Methods

Data were available from both the RFOP and SBLOP databases from 2006 to 2018. At sea observers provide extensive information on fish hauled onboard a vessel including: condition (alive, dead, barotrauma), disposition (kept, discarded dead, discarded alive, etc.), whether the fish was vented before release, length, and weight. Lengths were converted to fork length (cm) and provided here by 5cm bins. Fishing areas were categorized according to statistical grids and may be referenced using the areas designated under the RFOP (Figure 1).

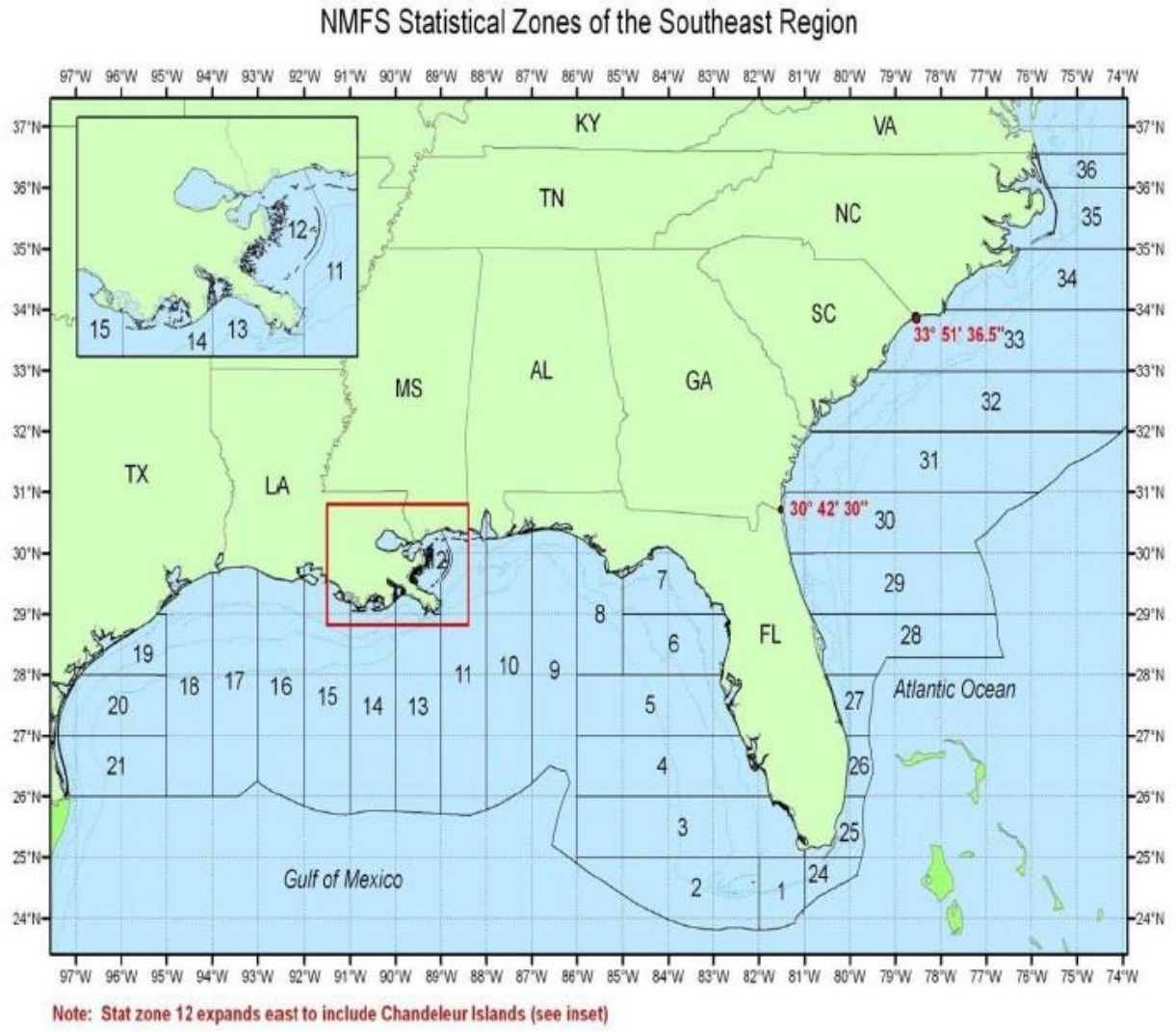


Figure 1. Statistical grids for the South Atlantic and Gulf of Mexico from the RFOP observer training manual (NMFS 2019).

Results and Discussion

The observer data were partitioned by data source (RFOP, SBLOP) and gear/fishery type (bottom longline, vertical line) for the Gulf. Table 1 summarizes the number of observations available for each source.

The minimum size limit for greater amberjack has been 36 inches (91.4 cm) fork length since 1990. Since 1998, there has been an annual seasonal closure from March 1 to May 31. Lastly, federal harvest restrictions began in 2009 resulting in a fishery closure each year. Annual longline and vertical line length compositions show differences in discard patterns under these management regulations.

Table 1. Summary of Data Available for the Gulf of Mexico.

Data Source	Gear Type	Trips caught greater amberjack	Vessels caught greater amberjack	Number of measured greater amberjack	Number of measured greater amberjack discards
RFOP	Longline	223	76	1,513	1,015
RFOP	Vertical Line	378	203	3,254	1,862
SBLOP	Longline	48	31	405	246

Bottom Longline Data

The RFOP data had 1,015 measured and discarded greater amberjack for bottom longline trips ranging from 24 to 186 centimeter bins. The SBLOP data had 246 discarded greater amberjack ranging from 33 to 168 centimeter bins. Table 2 shows the number of discarded and kept fish for each dataset by year along with the number of trips for each. Fish kept for bait, released alive, released dead, and unknown were included in the discard portion. Years with less than three observed vessels were aggregated with adjacent years to retain confidentiality. Spatial coverage of the SBLOP data include only the western Florida coast for the Gulf of Mexico, while RFOP data cover all of the Gulf with a concentration in western Florida (Figure 2). Figure 3 illustrates slightly different length distributions of greater amberjack from the RFOP and SBLOP datasets across all available years. The SBLOP data contain more discards at smaller sizes. The length compositions for the RFOP from 2006 to 2008 show that most of the greater amberjack were discarded for being under the size limit. Once federal harvest restrictions were implemented in 2009, there were more discards across all sizes for those years (Figure 4). This can also be seen in Figure 5 which shows a higher density of discards of greater amberjack above the minimum size limit during the closed season. The closed season includes both seasonal closures and fishery closures from meeting the quota limit.

Table 2. Kept and discarded greater amberjack by year for bottom longline trips.

RFOP Longline	Discards		Kept	
Year	**N**	**Trips**	**N**	**Trips**
2006 - 2007	14	5	11	6
2008	12	4	38	4
2009	53	13	67	13
2010	134	27	70	9
2011 - 2012	117	38	37	9
2013	315	33	48	5
2014	82	16	118	9
2015	74	13	25	7
2016 - 2017	220	34	64	13
2018	14	4		

SBLOP Longline	Discards		Kept	
Year	**N**	**Trips**	**N**	**Trips**
2006 - 2007	36	5	8	4
2008 - 2009	111	7	36	4
2010 - 2017	162	28	52	10

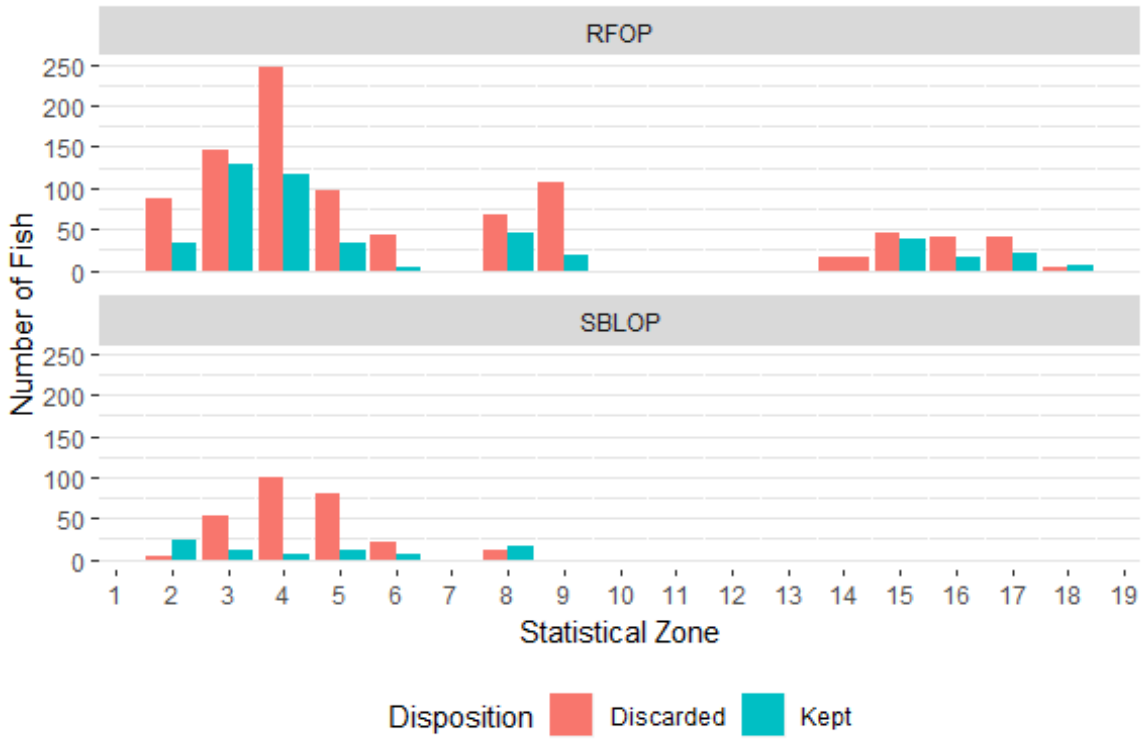


Figure 2. Frequency of where greater amberjack were caught on bottom longline trips, where statistical grids are defined in Figure 1.

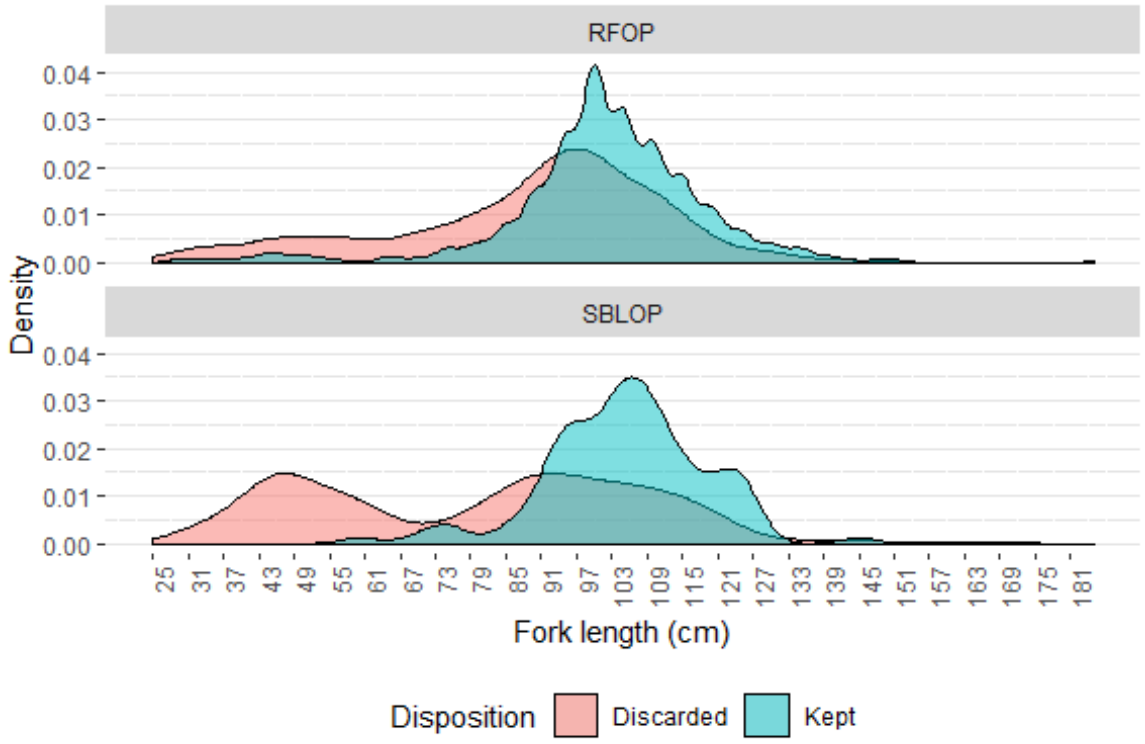
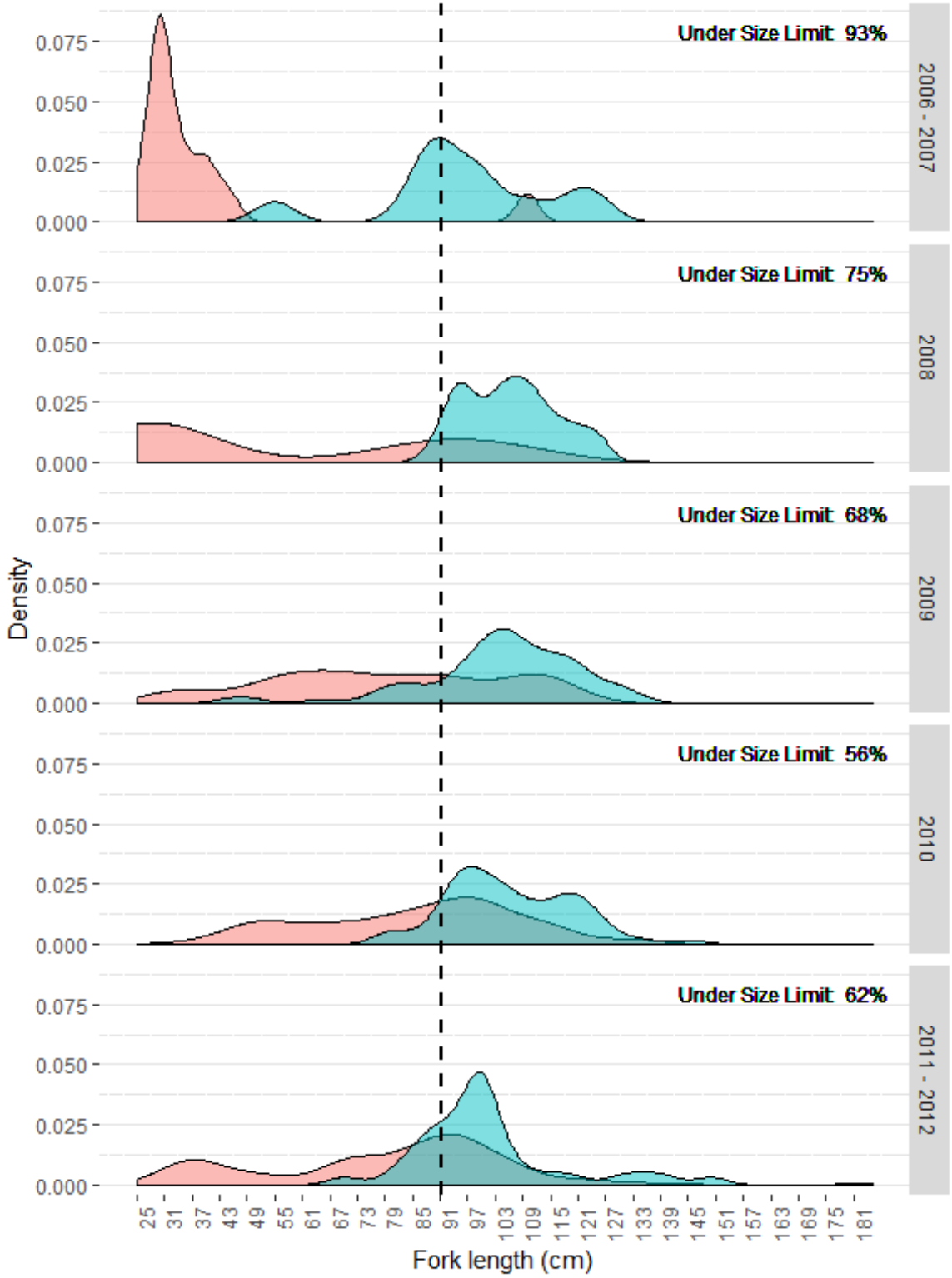


Figure 3. Overall length compositions for greater amberjack from RFOP (top panel) and SBLOP (bottom panel) bottom longline trips.


Under Size Limit 93%
Under Size Limit 75%
Under Size Limit 68%
Under Size Limit 56%
Under Size Limit 62%
2006 - 2007
2008
2009
2010
2011 - 2012
Density
0.075
0.050
0.025
0.000
25
31
37
43
49
55
61
67
73
79
85
91
97
103
109
115
121
127
133
139
145
151
157
163
169
175
181
Fork length (cm)

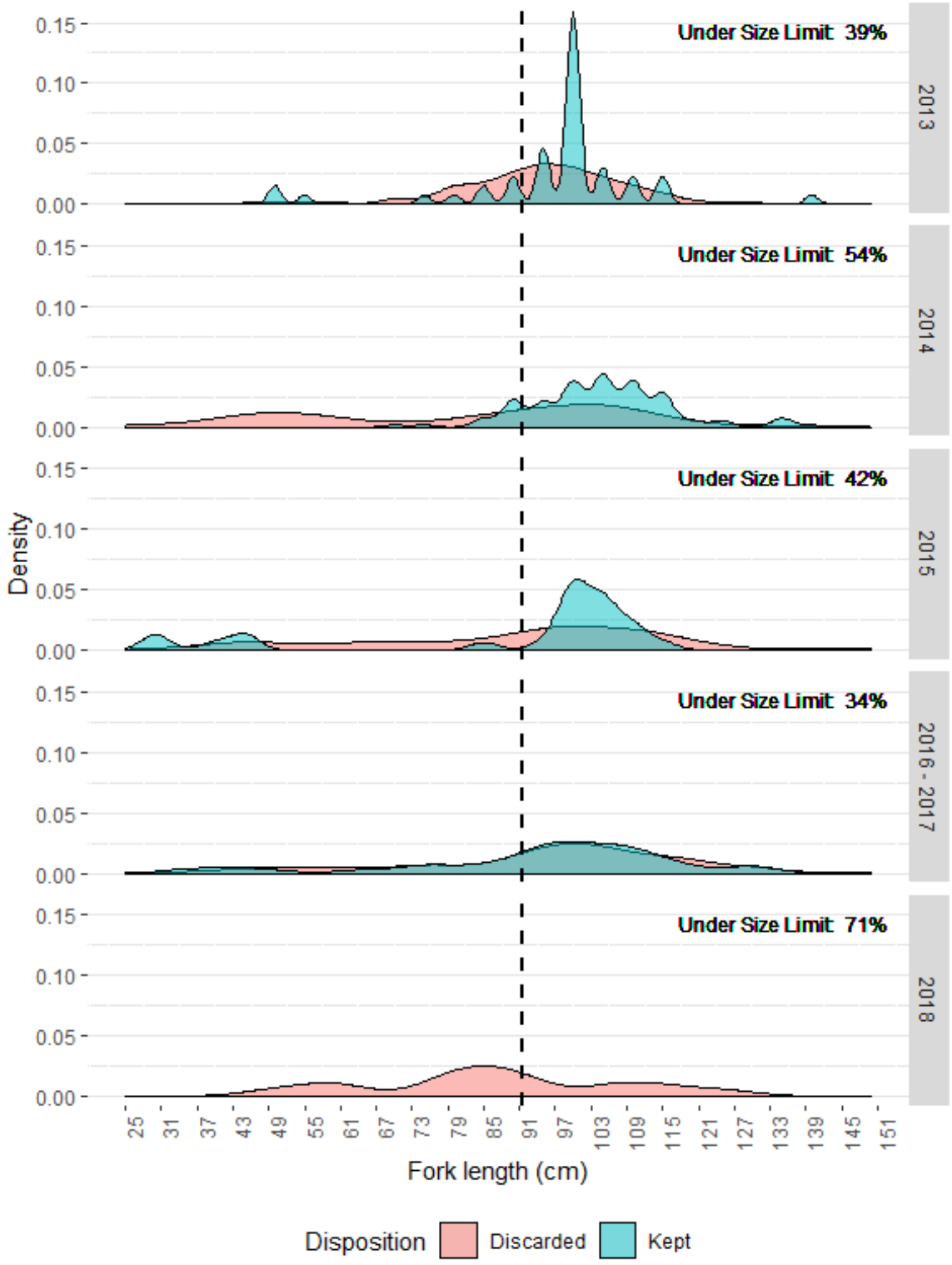


Figure 4. Length composition for greater amberjack by year for RFOP bottom longline trips. The dotted line indicates the minimum size limit.

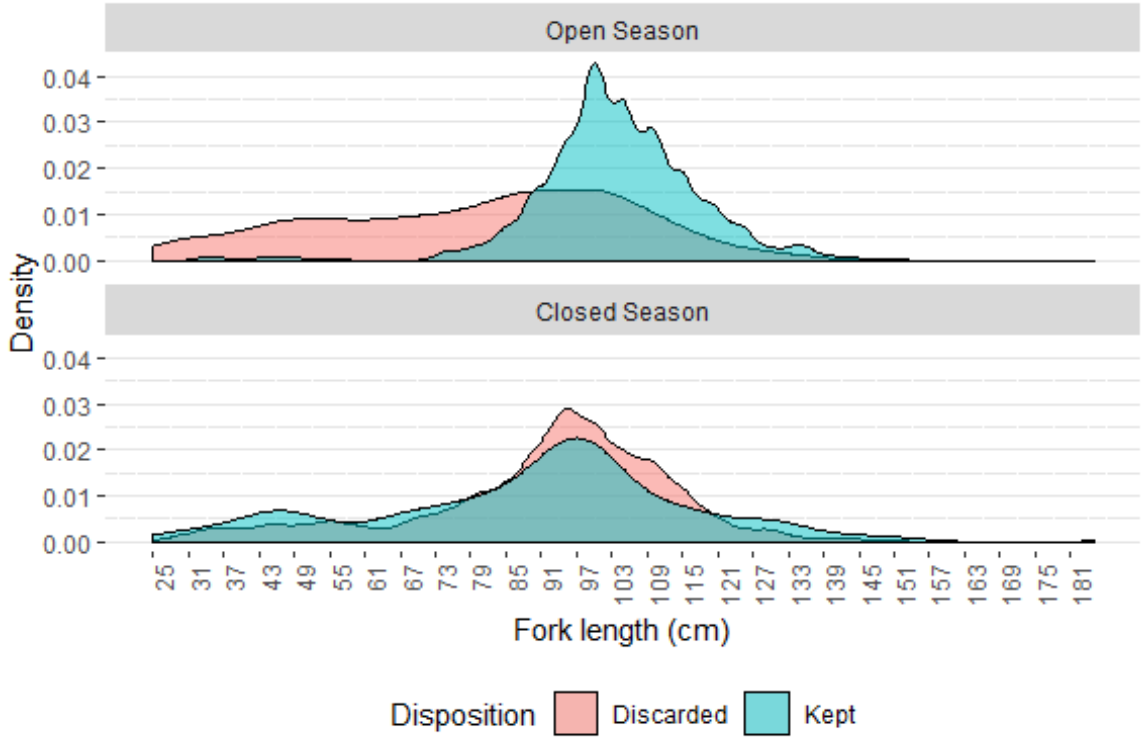


Figure 5. Length composition of greater amberjack for RFOP longline trips by open and closed season (seasonal closures March 1-May 31, 1998-present; quota closures from November 7, 2009, October 28, 2010, etc. through the end of the respective calendar years).

Vertical Line Data

Only the RFOP data were available for greater amberjack caught on vertical line (bandit or handline) trips for the Gulf. There were 1,862 greater amberjack measured and discarded ranging from 21 to 153 centimeter bins. Similar to the analyses for bottom longline, complementary plots were generated for vertical line trips. Table 3 shows the annual number of discarded and kept fish along with the number of trips for each. Most of the greater amberjack were caught off the coast of western Florida (Figure 6). Both the overall length compositions (Figure 7) and annual length compositions (Figure 8) show that most of the discards were below the minimum size limit. In Figure 9, the discarded density plots show a similar distribution for both the open and closed seasons. However, the kept portion is drastically different with more kept fish under the size limit during the closed season. Upon further investigation, only 28 greater amberjack across 23 trips accounted for the kept portion of the closed season, whereas the kept portion during the open season contained 1,261 fish.

Table 3. Kept and discarded greater amberjack by year for vertical line trips.

	Discards		Kept	
Year	**N**	**Trips**	**N**	**Trips**
2006	20	8	15	6
2007	117	28	37	10
2008 - 2009	111	29	92	11
2010 - 2011	164	30	65	8
2012	343	69	340	18
2013	262	35	40	5
2014	330	33	203	9
2015	268	56	239	12
2016 - 2018	350	67	258	21

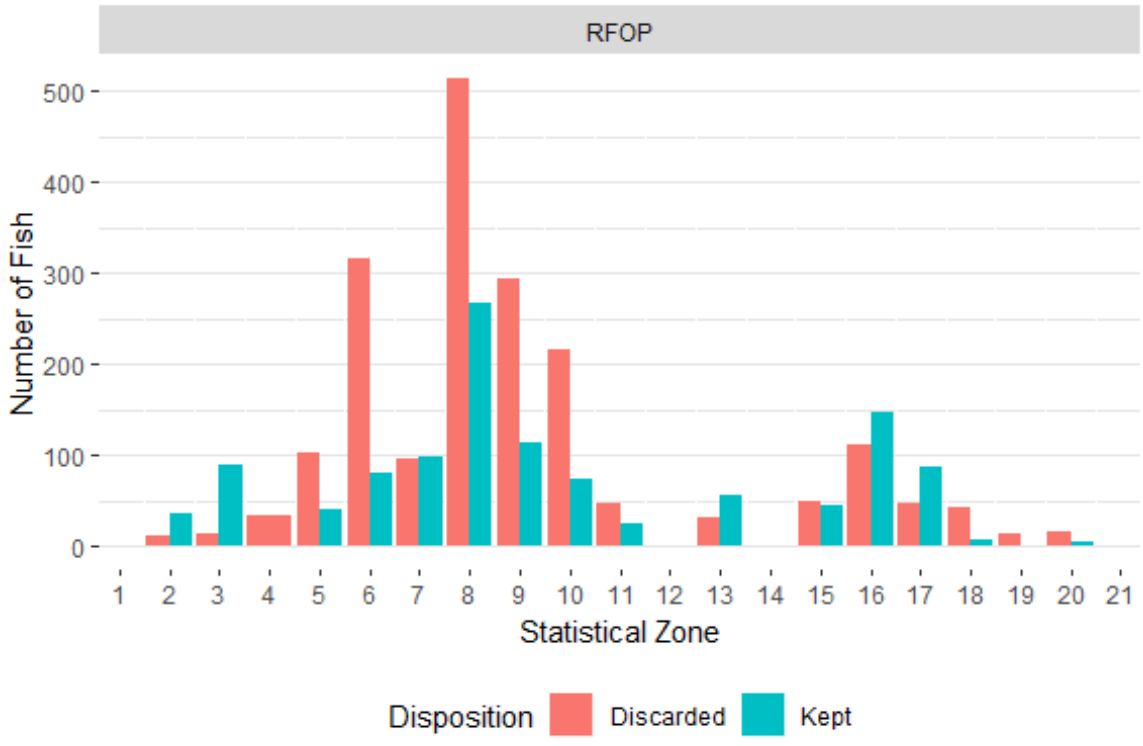


Figure 6. Frequency of where greater amberjack were caught on vertical line trips, where statistical grids are defined in Figure 1.

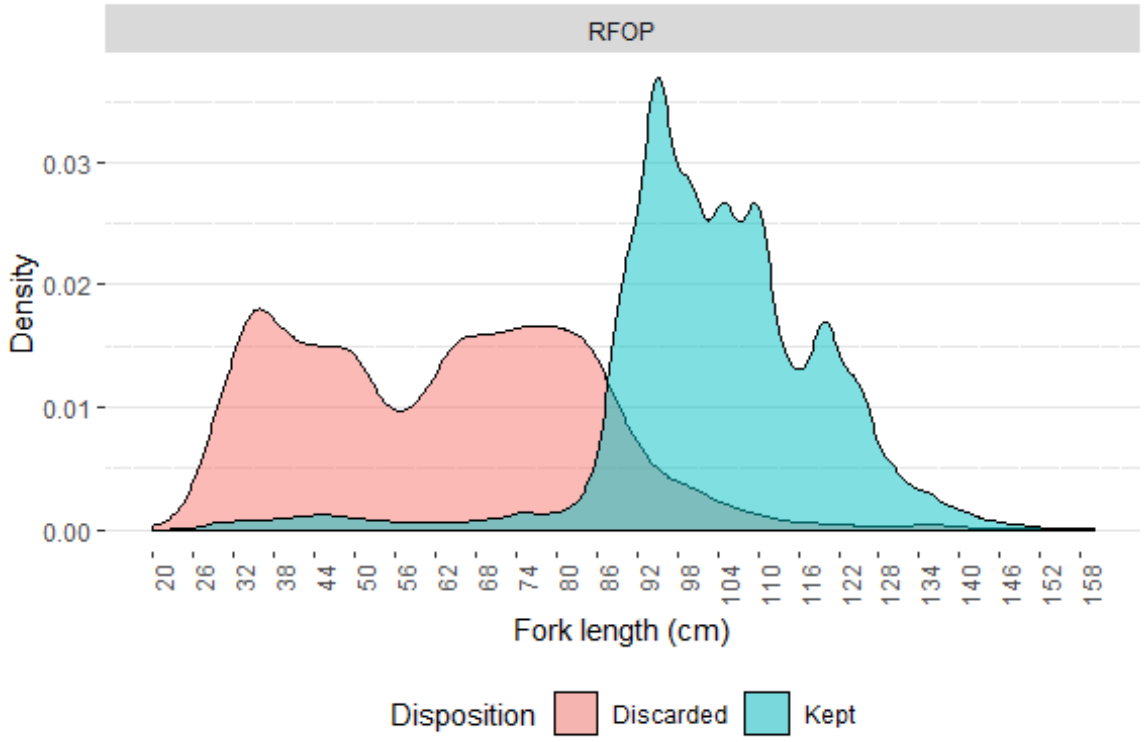
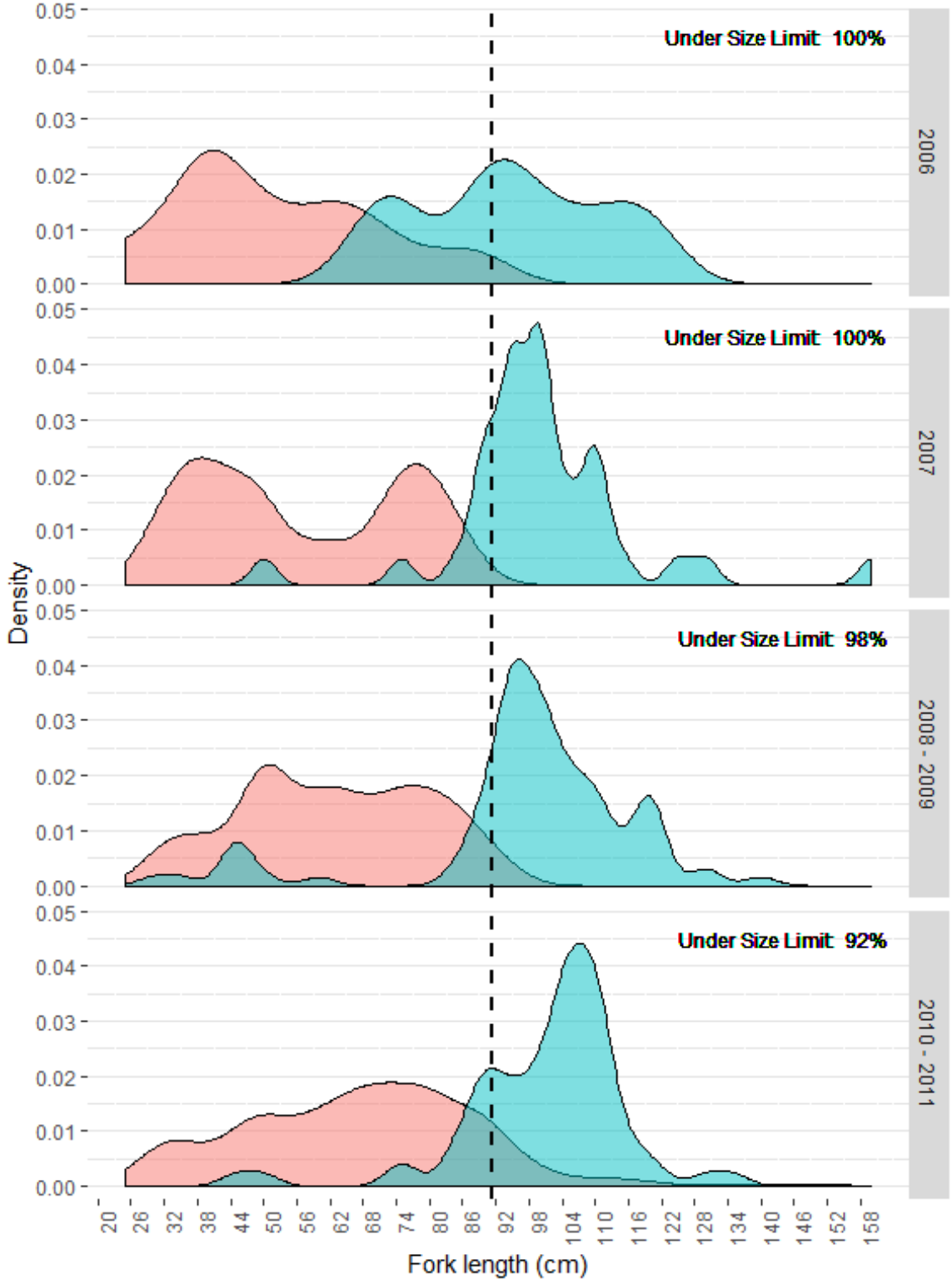


Figure 7. Overall length composition for greater amberjack for vertical line trips.


Under Size Limit 100%
Under Size Limit 100%
Under Size Limit 98%
Under Size Limit 92%
2006
2007
2008 - 2009
2010 - 2011
Density
Fork length (cm)
0.05
0.04
0.03
0.02
0.01
0.00
20
26
32
38
44
50
56
62
68
74
80
86
92
98
104
110
116
122
128
134
140
146
152
158

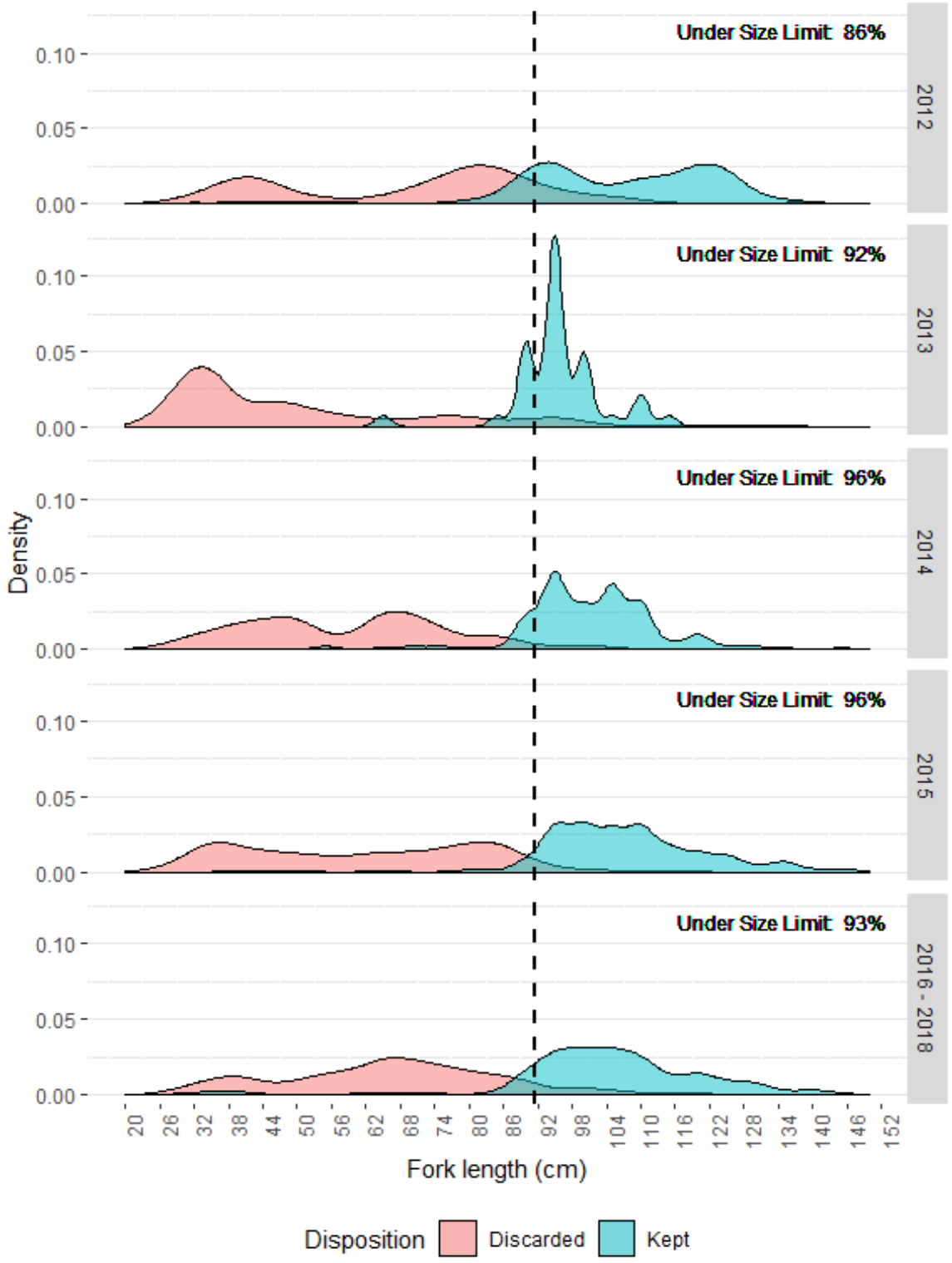


Figure 8. Length composition for greater amberjack by year for RFOP vertical line trips. The dotted line indicates the minimum size limit.

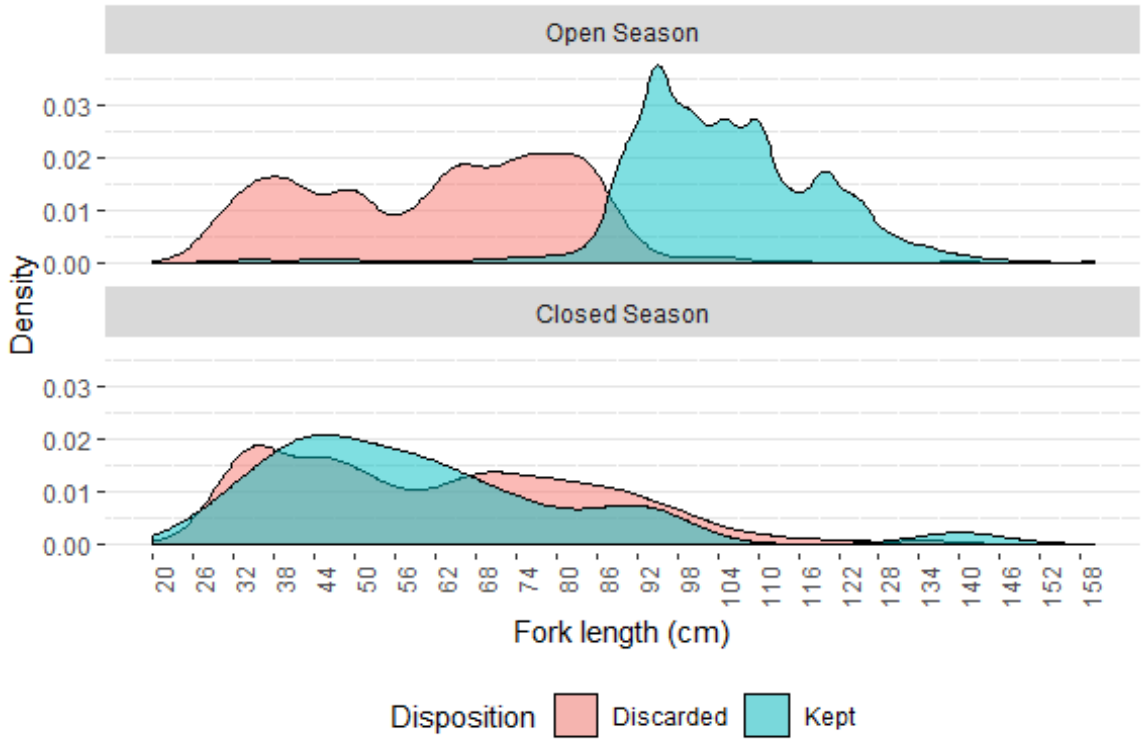


Figure 9. Length composition of greater amberjack for RFOP vertical line trips by open and closed season (seasonal closures March 1-May 31, 1998-present; quota closures from November 7, 2009, October 28, 2010, etc. through the end of the respective calendar years).

References

Mathers, A. N., B. M. Deacy, H. E. Moncrief-Cox, and J. K. Carlson. 2018. Characterization of the shark bottom longline fishery. 2017. NOAA Technical Memorandum NMFS-SEFSC-727, 21 p.1-21. doi: 10.25923/f1n6-r841.

Morgan, A., P. W. Cooper, T. Curtis, G. H. Burgess. 2010. Overview of the U.S. East Coast Bottom Longline Shark Fishery, 1994-2003. Marine Fisheries Review, 71(1) p.23-38.

NMFS. 2019. Characterization of the U.S. Gulf of Mexico and Southeastern Atlantic Otter Trawl and Bottom Reef Fish Fisheries Observer Training Manual. National Marine Fisheries Service, Southeast Fisheries Science Center, Galveston Laboratory.

Scott-Denton, E., P. F. Cryer, J. P. Gocke, M. R. Harrelson, D. L. Kinsella, J. R. Pulver, R. C. Smith, J. Williams. 2011. Descriptions of the U.S. Gulf of Mexico Reef Fish Bottom Longline and Vertical Line Fisheries Based on Observer Data. Marine Fisheries Review, 73(2) p.1-26.