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SEDAR68-DW-17

5 March 2020
Updated: 27 August 2020

Please cite this document as:

Atkinson, Sarina F. 2020. Commercial Discard Length Composition for Gulf of Mexico Scamp and Yellowmouth Grouper. SEDAR68-DW-17. SEDAR, North Charleston, SC. 14 pp.

Commercial Discard Length Composition for Gulf of Mexico Scamp and Yellowmouth Grouper

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August 2020

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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 scamp and yellowmouth grouper. 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 (with few exceptions, an observer must be allowed onboard the selected vessel) 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 and the SEFSC does not have access to these data (Morgan et al. 2010). For the Gulf, vessel selection is limited to western Florida.

Methods

Data were available from both the RFOP and SBLOP databases from 2006 to 2017. 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 2cm bins. Fishing areas were categorized according to statistical grids and may be referenced using the areas designated under the RFOP (Figure 1).

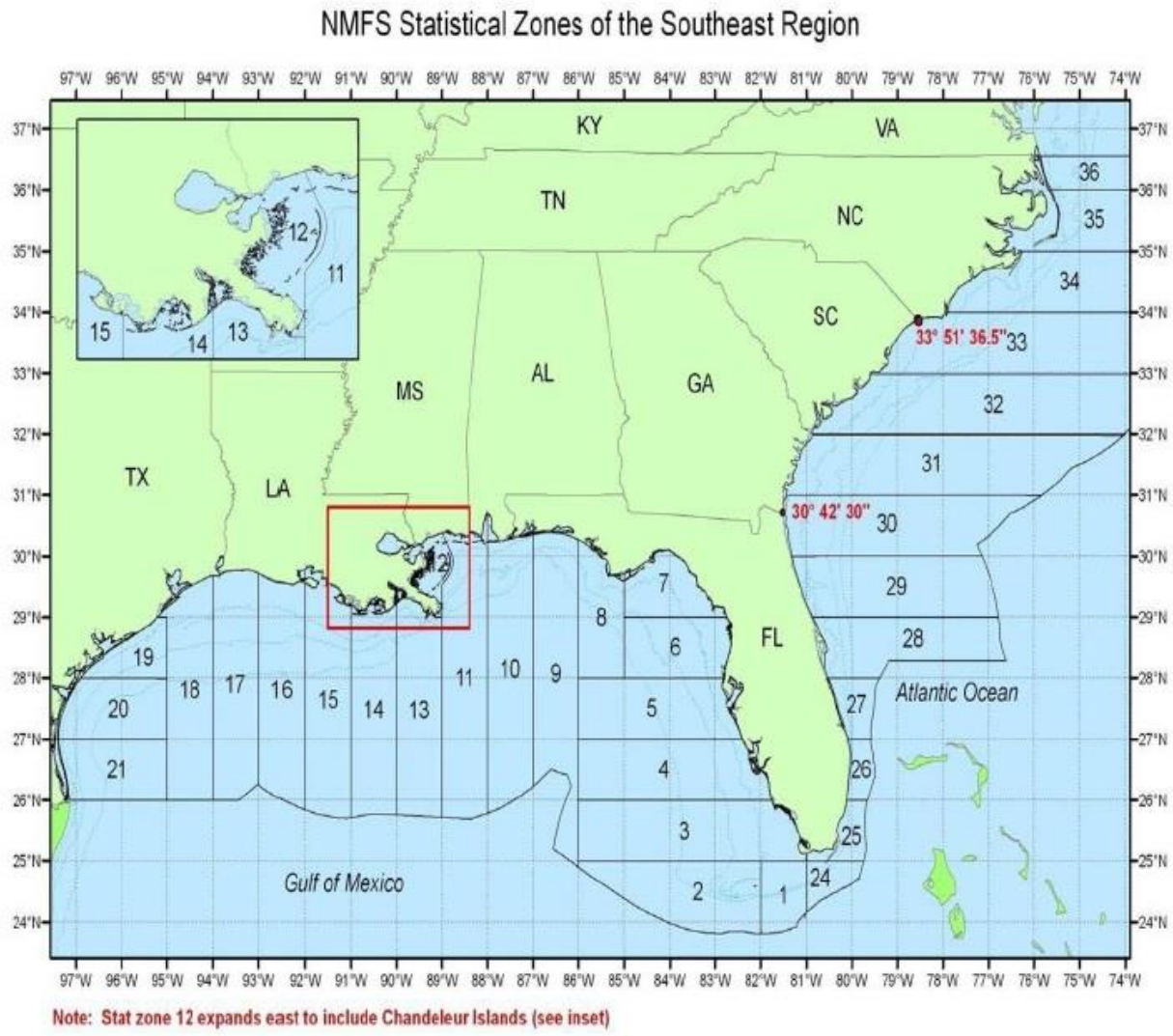


Figure 1. Statistical grids for the South Atlantic and Gulf of Mexico from the RFOP training manual (NMFS 2019).

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. Fish kept for bait, released alive, released dead, and unknown were included in the discarded portion. Fish designated as unknown include unknown fate (either kept or discarded) as well as released unknown (dead or alive). Scamp and yellowmouth grouper were combined in analyses, yet no yellowmouth grouper were discarded from either observer program. Therefore, results will use scamp when referring to both scamp and yellowmouth grouper data.

The minimum size limit for scamp has been 16 inches (40.6 cm) since 1999. Additionally, an individual fishing quota (IFQ) was launched in 2010 for scamp and yellowmouth grouper. Results for longline and vertical line gears explore the length compositions by year to 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 scamp	Vessels caught scamp	Number of measured scamp	Number of measured scamp discards
RFOP	Longline	309	84	10,951	246
RFOP	Vertical Line	540	237	5,646	596
SBLOP	Longline	62	33	2,801	99

Bottom Longline Data

The RFOP data had 246 discarded and measured scamp for longline trips and 99 discarded scamp from the SBLOP data. Table 2 shows the number of discarded and kept fish for each dataset by year along with the number of trips for each. Years with less than three observed vessels were aggregated with adjacent years to retain confidentiality. Most of the scamp were caught off the coast of western Florida from RFOP and as mentioned previously, SBLOP data are limited to western Florida for the Gulf (Figure 2). Figure 3 illustrates similar length distributions of scamp from the RFOP and SBLOP data across all available years. To further separate the length composition for only RFOP where more data were available, Figure 4 shows the length compositions by year. All pre-IFQ years were aggregated due to data confidentiality concerns. Between 2006 and 2009, 53 percent of the discards were under the minimum size limit. Once IFQ was implemented in 2010, more of the discards were under the minimum size limit of 16 inches. This can also be seen in Figure 5 which shows the overall length composition for RFOP data based on pre-IFQ and IFQ years.

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

RFOP Longline	**Discards**		**Kept**	
Year	**N**	**Trips**	**N**	**Trips**
2006 - 2009	32	10	930	39
2010	36	15	1,526	36
2011	54	18	1,754	61
2012	4	3	447	12
2013	42	24	2,642	59
2014 - 2015	14	10	724	41
2016	56	16	2,509	44
2017	8	3	173	12
SBLOP Longline	**Discards**		**Kept**	
Year	**N**	**Trips**	**N**	**Trips**
2006 - 2010	52	17	1,184	32
2011	10	5	236	6
2012 - 2017	37	17	1,282	22

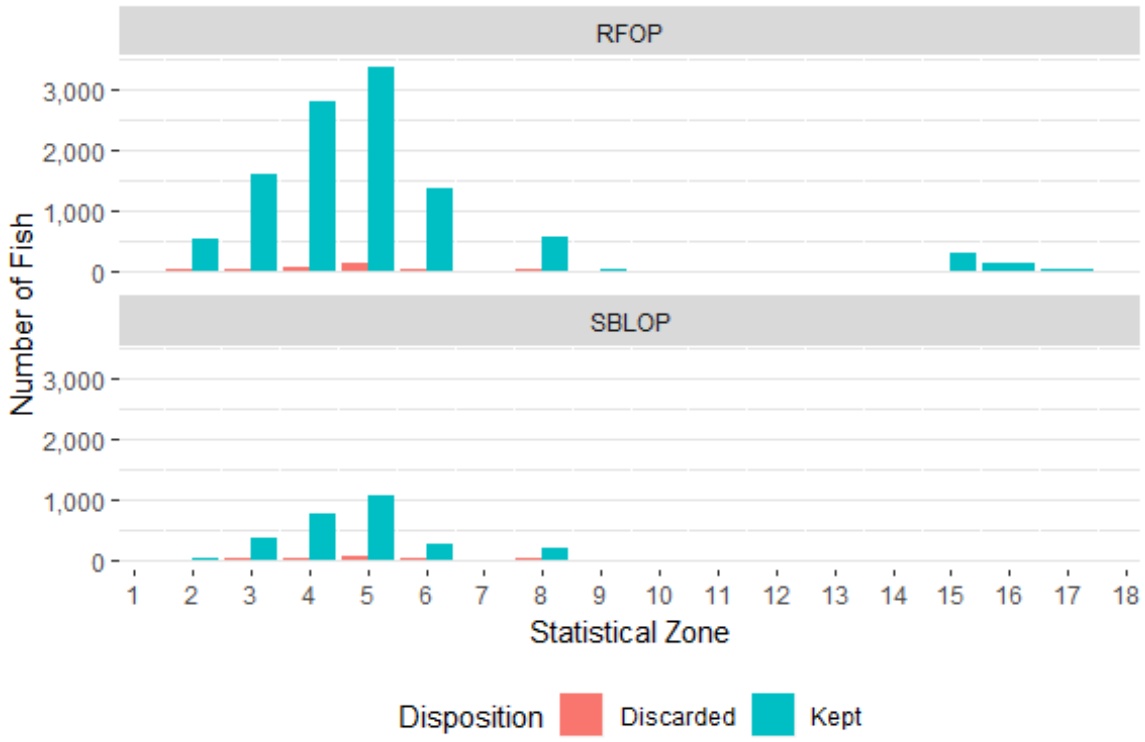


Figure 2. Frequency of where scamp were caught on bottom longline trips, where statistical zones are defined in Figure 1.

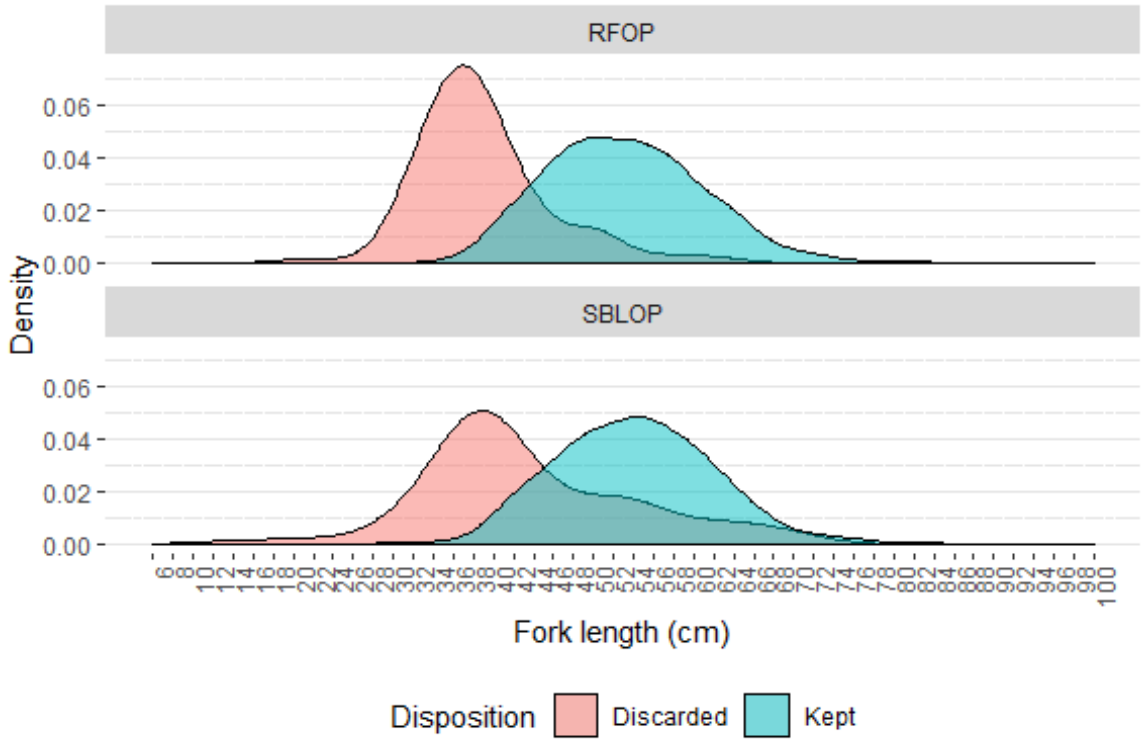
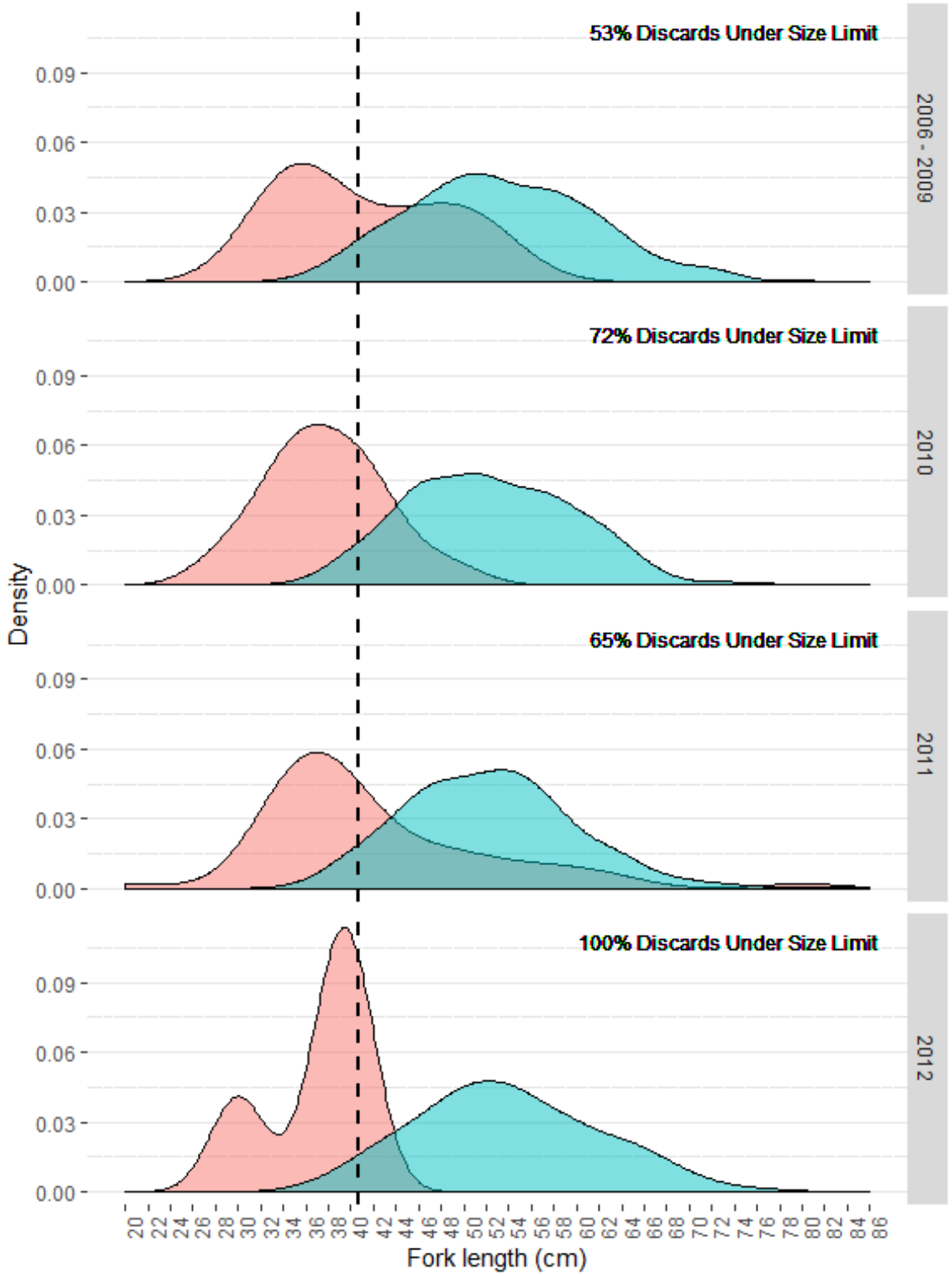


Figure 3. Overall smoothed length compositions for scamp from RFOP (top panel) and SBLOP (bottom panel) bottom longline trips.


53% Discards Under Size Limit
72% Discards Under Size Limit
65% Discards Under Size Limit
100% Discards Under Size Limit
2006 - 2009
2010
2011
2012
Density
0.09
0.06
0.03
0.00
20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86
Fork length (cm)

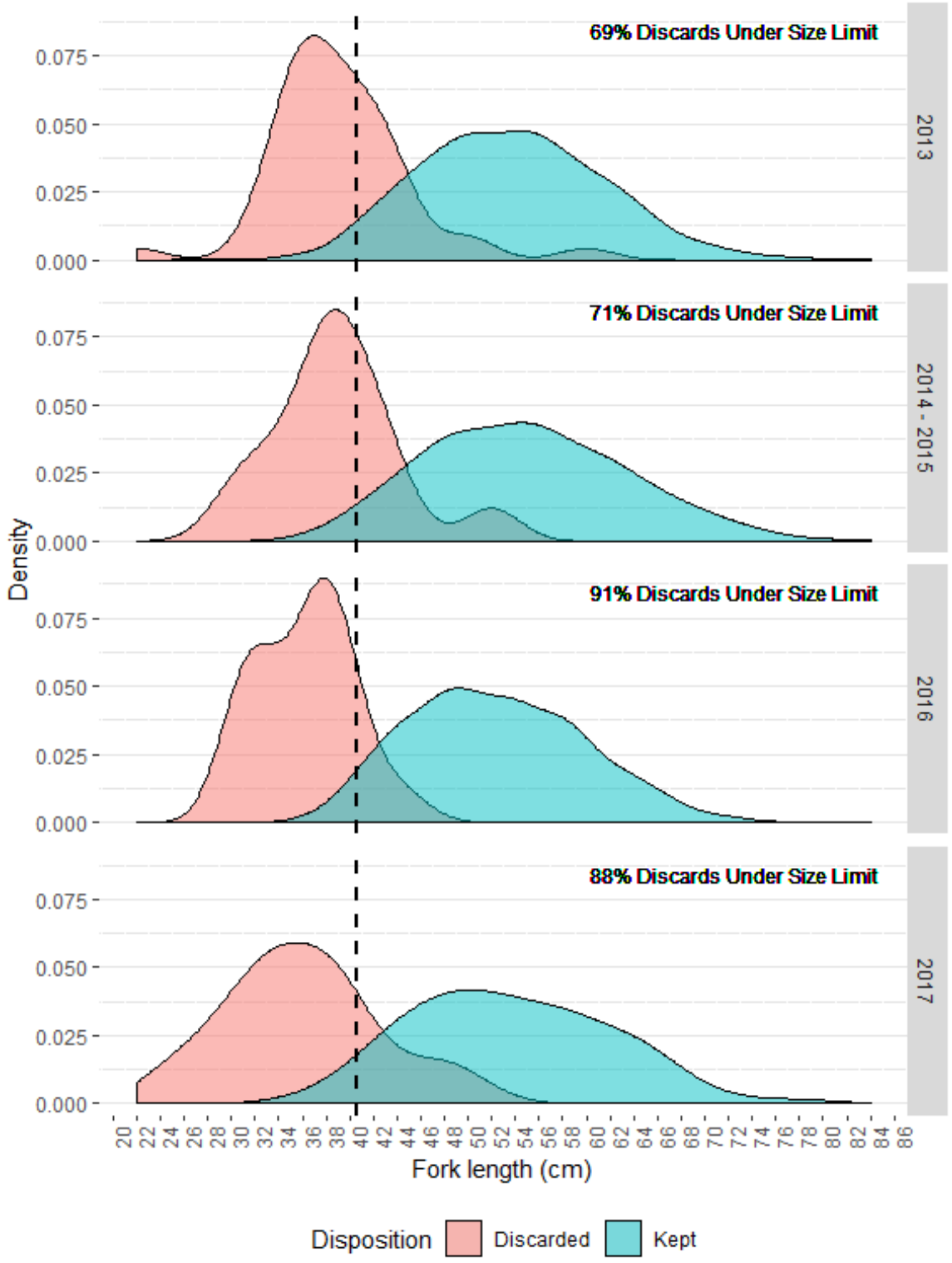


Figure 4. Smoothed length composition for scamp by year for RFOP bottom longline trips. The dotted line indicates the minimum size limit. The percentage reported represents measured fish below the minimum size limit.

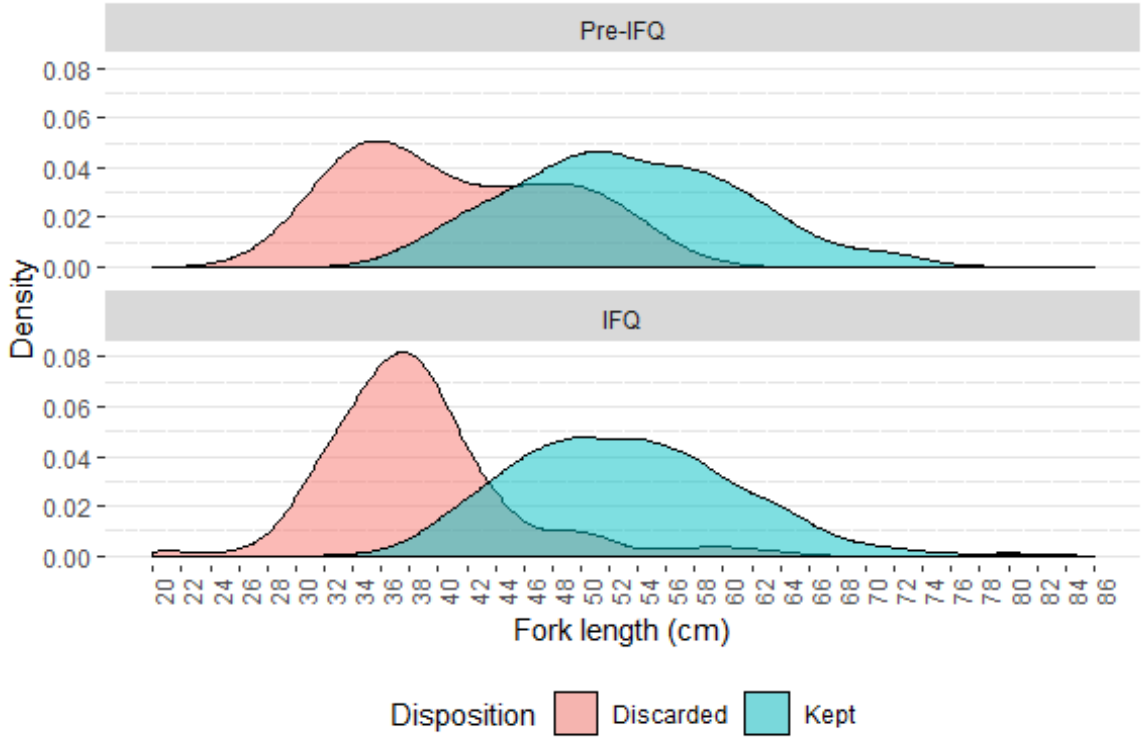


Figure 5. Smoothed length composition of scamp observed on RFOP longline trips during pre-IFQ years (2006-2009) and during years following IFQ implementation (2010-2017).

Vertical Line Data

Only RFOP data were available for scamp caught on vertical line (bandit or handline) trips for the Gulf. There were 595 scamp measured and discarded. Similar to the analyses for bottom longline, complementary plots were generated for vertical line trips. Table 3 shows the most scamp discarded in 2012 compared to the other years. Most of the scamp were caught off the coast of western Florida (Figure 6). Figure 7 shows to the overall length composition of scamp for all RFOP vertical line trips. Before IFQ, 89 to 100 percent of scamp were discarded for being under the minimum size limit (Figure 8). When IFQ was implemented in 2010, there seemed to be a transition period with the new quota regulation, but by 2014 almost all of the discards were under the minimum size limit. This can also be seen in Figure 9 where overall length compositions were separated by pre-IFQ and IFQ years.

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

	Discards		Kept	
Year	**N**	**Trips**	**N**	**Trips**
2006 - 2007	57	22	470	65
2008	10	8	269	23
2009	22	9	157	14
2010	74	14	100	15
2011	28	15	305	36
2012	155	47	1,466	113
2013	43	17	418	34
2014	50	20	343	38
2015	60	21	692	62
2016	81	21	591	52
2017	16	10	239	17

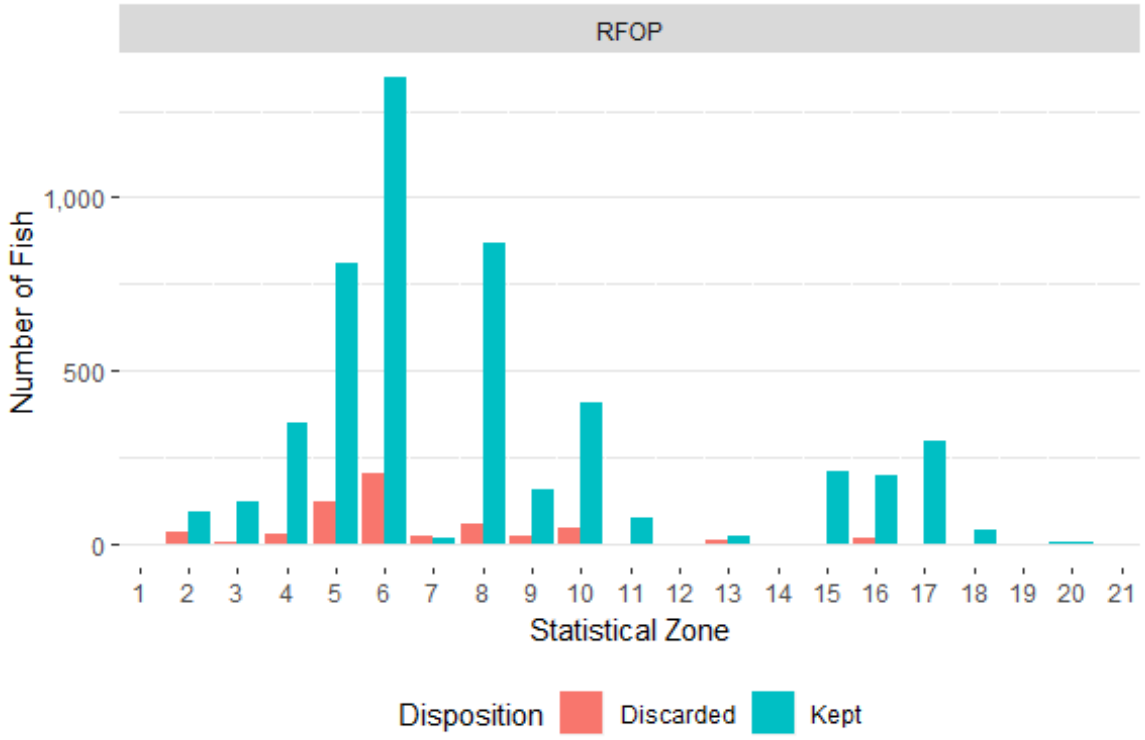


Figure 6. Frequency of where scamp were caught on vertical line trips, where statistical zones are defined in Figure 1.

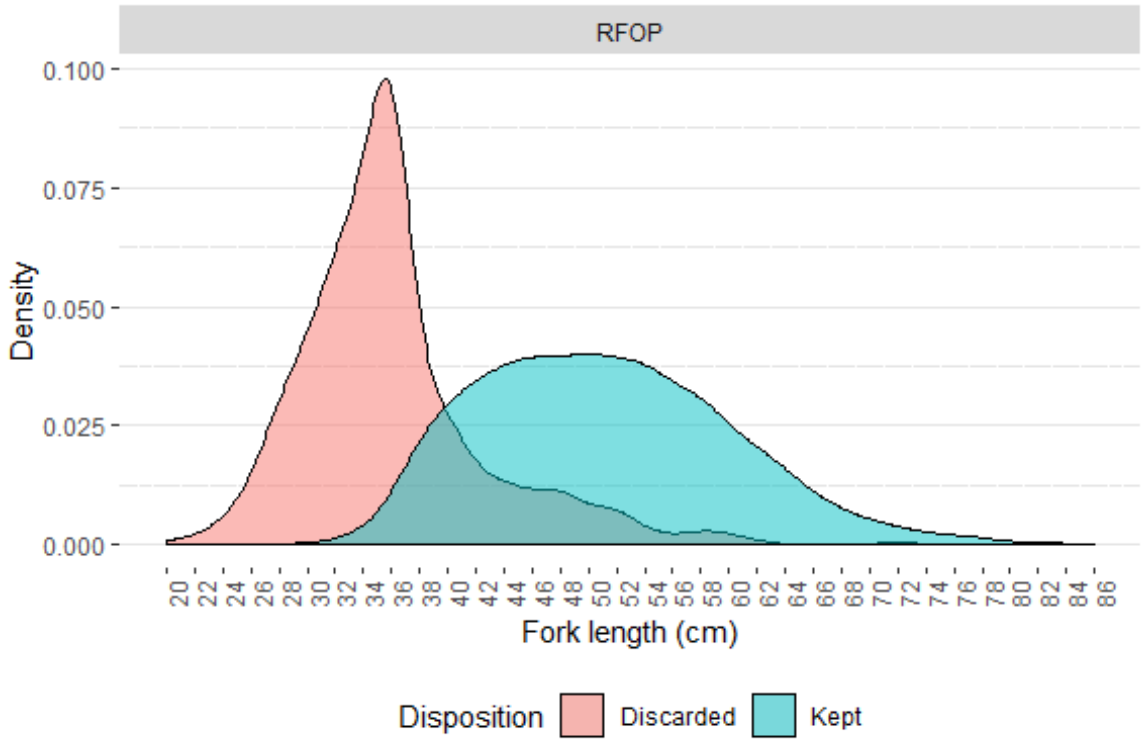
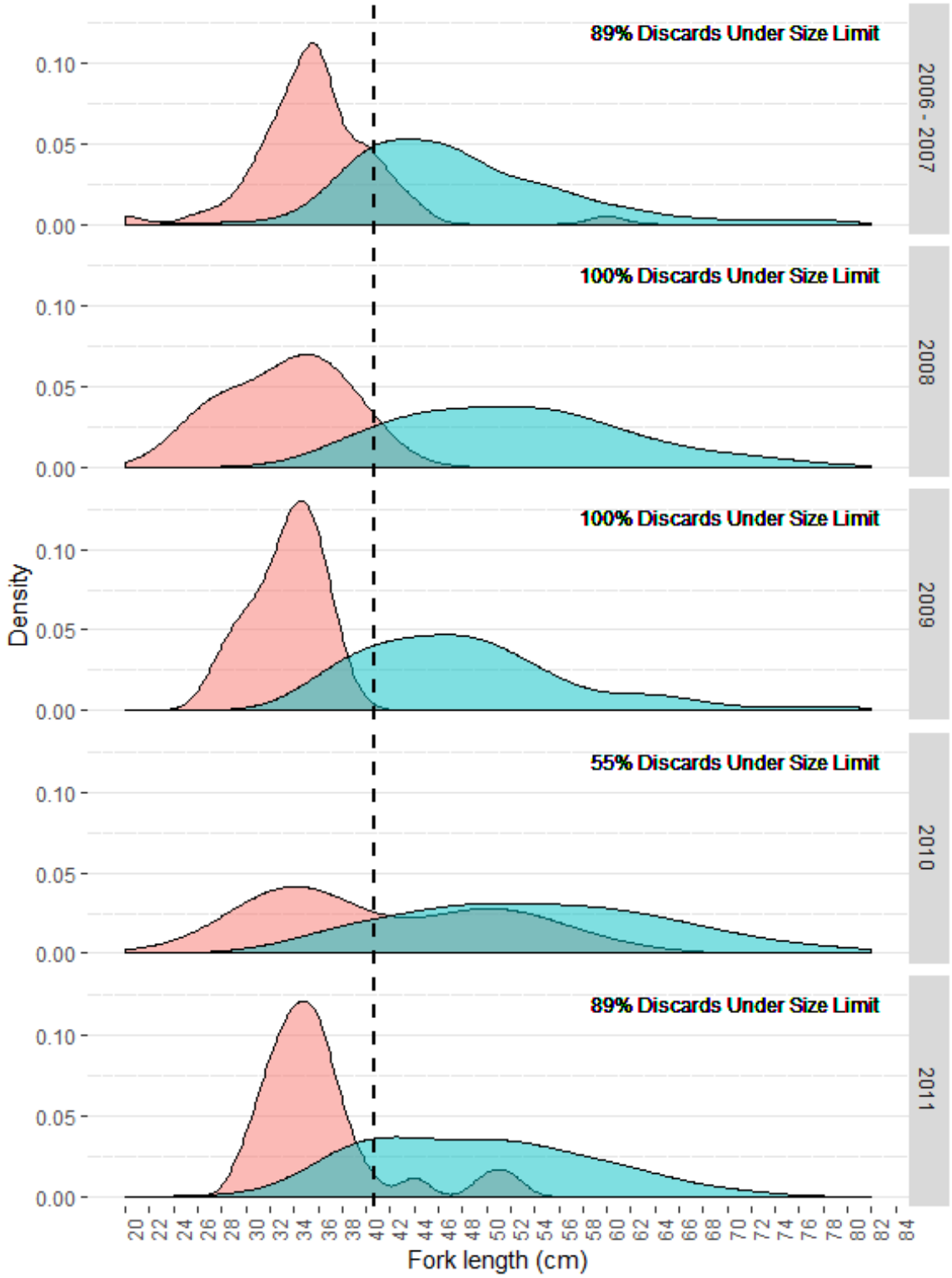


Figure 7. Overall smoothed length composition for scamp for vertical line trips.


89% Discards Under Size Limit
100% Discards Under Size Limit
100% Discards Under Size Limit
55% Discards Under Size Limit
89% Discards Under Size Limit
2006 - 2007
2008
2009
2010
2011
Density
0.00
0.05
0.10
20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84
Fork length (cm)

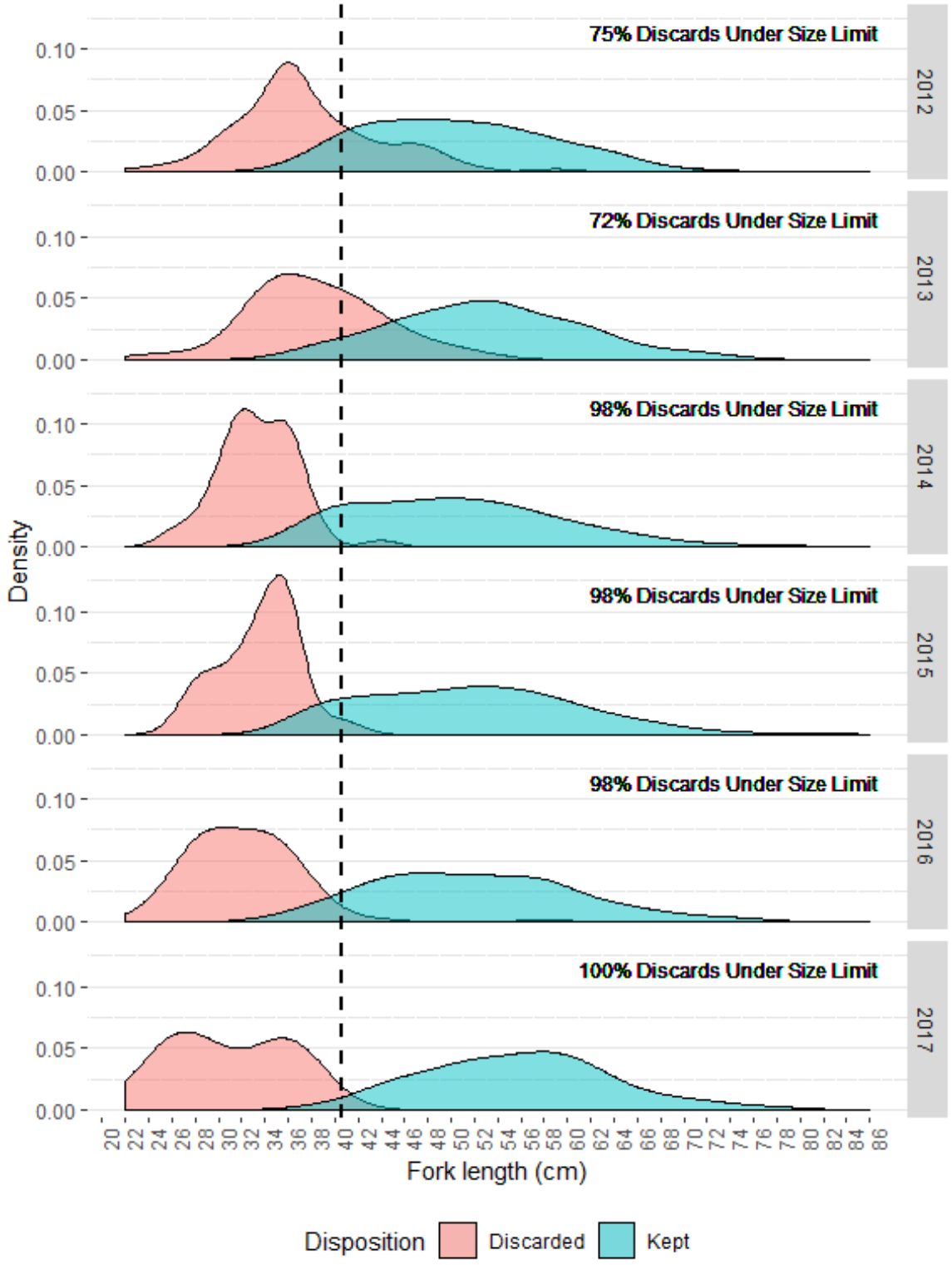


Figure 8. Smoothed length composition for scamp by year for RFOP vertical line trips. The dotted line indicates the minimum size limit. The percentage reported represents measured fish below the minimum size limit.

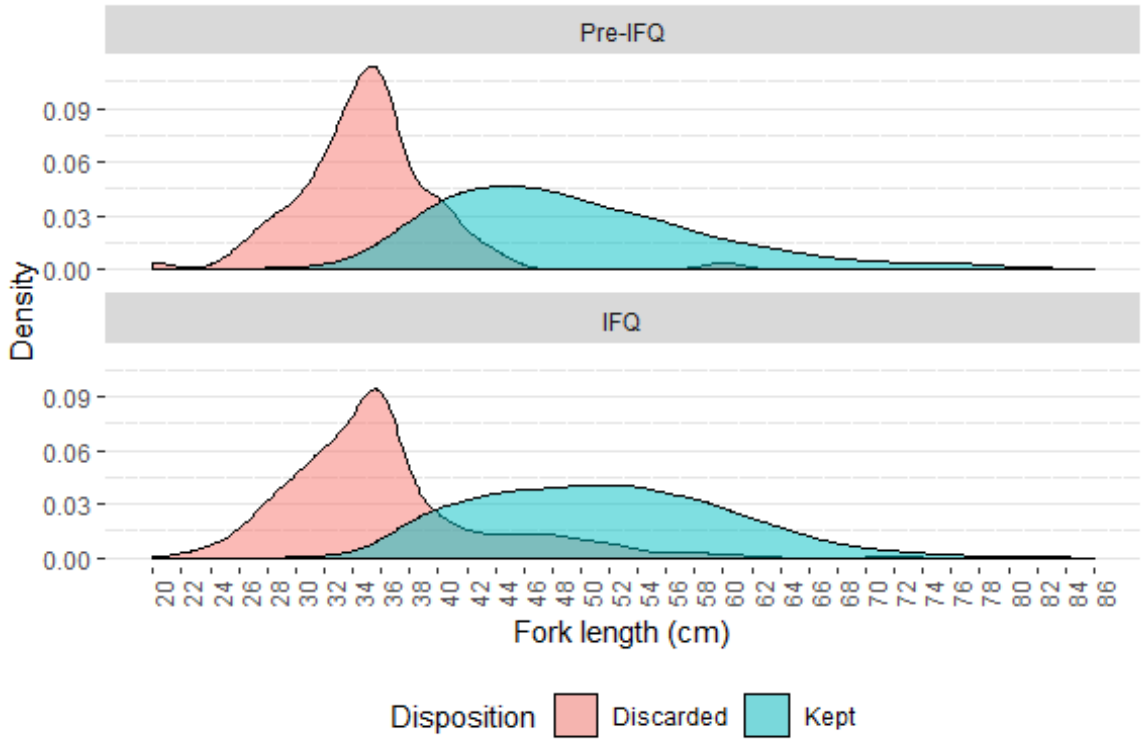


Figure 9. Smoothed length composition of scamp for RFOP vertical line trips before 2010 when no IFQ and once IFQ was implemented.

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