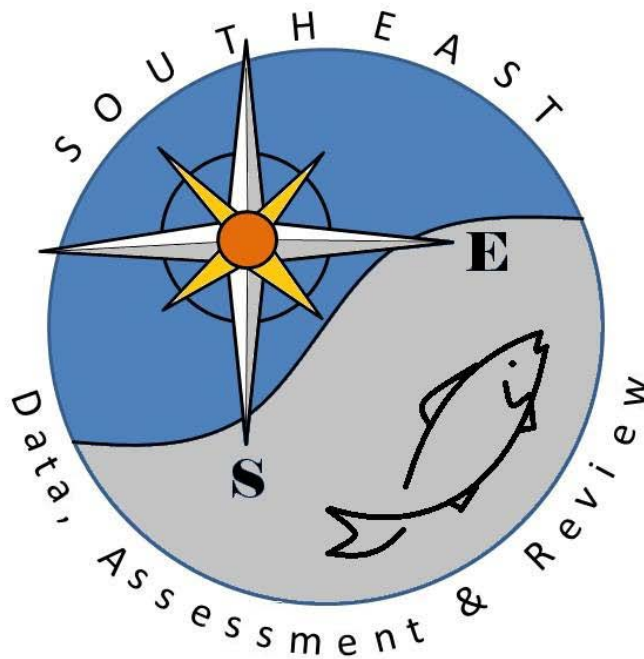


A Summary of Data on the Size Distribution and Release
Condition of Red Snapper Discards from Recreational Fishery
Surveys in the Gulf of Mexico

Beverly Sauls

SEDAR31-DW11

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A Summary of Data on the Size Distribution and Release Condition of Red Snapper Discards from Recreational Fishery Surveys in the Gulf of Mexico

Prepared by:

Beverly Sauls and Bridget Cermak
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Saint Petersburg, Florida

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Discarded fish are unavailable at the time of landing and detailed information on the size and release condition of discarded fish is not collected in traditional dockside surveys of recreational fisheries. At-sea observer surveys provide valuable information on the size and condition of discarded fish, and such surveys have been conducted on for-hire headboat and charter vessels in the Gulf of Mexico since 2004. However, for-hire observer surveys have not been consistently funded and most available data are from the eastern Gulf. This report provides a summary of available information on the size, release condition, and disposition of red snapper collected by trained observers since 2005 during at-sea surveys on for-hire vessels in the Gulf of Mexico.

At-sea observer coverage is not practical from private recreational boats, and information on the size and condition of red snapper discards from this segment of the recreational fishery is more limited. The state of Florida has conducted a self-recruited volunteer angler catch card program since 2010. A summary of information collected from this program is provided in this report and compared to information collected from at-sea observer surveys.

At-Sea Observer Survey Coverage

In 2004, at-sea observer surveys were conducted on headboats in Alabama, and coverage was extended in 2005 to include headboats operating from the Gulf coast of Florida from the panhandle through the Florida Keys. The at-sea headboat survey was funded by the Gulf Fisheries Information Network (Gulf FIN) continuously through 2007, and was discontinued in both states in 2008. In June, 2009 the state of Florida secured alternative funds to continue at-sea observer coverage on both headboats and charter vessels in the northwestern panhandle and central peninsula (Figure 1), and that coverage has continued through 2012. From September 2010 through August 2011, the state of Texas participated in a cooperative study funded by the Marine Recreational Information Program to pilot test a for-hire logbook data collection method, which included charter vessels with federal reef fish permits operating from ports surrounding the Corpus Christi area (Figure 2). The pilot study included at-sea observer coverage on participating charter vessels to validate self-reported discard data submitted on logbook trip reports. At-sea observer survey data collected in northwest Florida also contributed to the MRIP pilot study.

At-Sea Observer Survey Methods

Alabama and Florida, 2005 to 2007

Headboat vessels from Alabama and three subregions in Florida (Figure 1) were randomly selected each week. Florida's western central region also had a separate sample quota for multi-

day trips that fish in areas farther offshore (Figure 1). Operators from selected vessels were contacted by state biologists and a trip was arranged on a single trip in a selected week. Dependent upon the number of customers on board, one or two biologists accompanied passengers during the scheduled trip. The captain and mates cooperated by making sure fish caught by their anglers were observed by one of the biologists before they were stored in the fish hold or released overboard. Biologists would assist with dehooking fish for data collection, but were not permitted to influence the decision to keep or release a fish. For each fish, biologists recorded the species, disposition, size (fork length in mm), and the condition of fish that were released. Disposition was coded as:

- 1: thrown back alive, legal;
- 2: thrown back alive, not legal;
- 3: plan to eat;
- 4: used for bait or plan to use for bait;
- 5: sold or plan to sell;
- 6: thrown back dead or plan to throw away.

Release condition was coded as:

- Good = 1: fish swam toward bottom immediately upon entry into the water;
- Fair = 2: fish was disoriented upon release and slowly swam towards the bottom;
- Poor = 3: fish was very disoriented upon release and remained at the surface;
- Dead = 4: fish was either dead or unresponsive upon entering the water;
- Eaten = 5: fish was eaten by a bird, another fish, or a marine mammal;
- Unobserved = 9: unable to observe fish, not applicable.

Trip level information for each trip included the area fished, duration of fishing (to the nearest half hour), number of anglers, and minimum and maximum depths (feet) of the fishing sites. Area fished was coded differently for Alabama and Florida regions.

Area fished for Alabama were coded as:

- 1: 3 miles or less from shore; or
- 2: more than 3 miles from shore

Area fished for Keys, western peninsula, and northwest Florida were coded as:

- 3: 10 miles or less from shore; or
- 4: more than 10 miles from shore.

A brief interview with each angler observed during a trip was also conducted to collect information on primary and secondary target species, angler avidity, and state and county of residence.

Florida, 2009-2012

Similar to methods described above, charter and headboat vessels were randomly selected each week from a list of participating vessels in the northwestern region and central western regions of Florida. Vessel participation is voluntary and 160 for-hire vessels are currently participating in the project (126 in the panhandle and 34 in the Tampa Bay area). Selected vessels are contacted

in advance to schedule a single trip during the selected week. Trips are scheduled based on vessel capacity. For example, when 6-pack vessels are selected, a trip is scheduled on a day where the reservation is for a party of 5 or less anglers. If there is no room available on a selected vessel for any reserved trips during the selected week, another vessel is randomly selected.

Participating vessel operators permit up to two FWC biologists to board during a scheduled trips, and captains and mates actively assist biologists by permitting them to observe and collect data from fish as they are removed from anglers' gear and before fish are released or placed in the fish box. Vessel operators also provide biologists with information on depth and area fished (commercial statistical area and/or degrees and minutes latitude and longitude) for each fishing station during each observed trip.

For each fish, biologists recorded the species, disposition, size (fork length in mm), and the condition of fish that were released in the same manner as 2005-2007.

Additional information collected for each fish includes:

Hook type (circle, J, other) and size (based on a sizing chart)
Anatomical location of embedded hooks (lip, mouth, throat, gill, gut, eye, external)
Method of hook removal (easy or difficult; by hand, dehooking tool, pliers, or left in place)
Barotrauma symptoms (inflated bladder, everted stomach, extruded intestines, exophthalmia)
Venting method (released without venting, bladder vented, stomach vented)

Red snapper were also tagged with dart tags (see SEDAR 31 working paper submitted by Sauls for tag recapture analysis).

A project coordinator conducted quality assurance and quality control checks on all field data as it was collected and submitted. Following data entry, electronic data were proofed against field data sheets.

Texas, 2010-2011

Charter vessels at-sea observer samples in Texas were collected in the same manner described above for Florida, 2009-2012, with the following exceptions. Red snapper were not tagged in Texas and information on hook type, hook location, hook removal, barotrauma, and venting was not collected.

At-Sea Observer Survey Data Analysis

Characterization of Trips:

Sampled trips were categorized into the following trip-types based on the duration of the sampled trip:

- Single-Day Trips (<24 hours)
 - Half-Day: < 6 hours
 - Three-Quarter-Day: 6 – 8 hours
 - Full-day: 9 - 14 hours
- Multi-Day Trips (>24 hours)

Headboat trips were not sampled proportional to fishing effort. For example, multi-day trips represent less than 3% of headboat fishing effort in Florida, but were sampled at a much higher rate in at-sea observer surveys. In the western central region of Florida, red snapper are more abundant and of larger size in the areas where multi-day trips fish compared to single day headboat trips. In the northwestern region of Florida, half-day trips were under-sampled with respect to headboat effort. We generated weighting factors for different trip-types using fishing effort data reported on headboat logbook trip reports for the years 2005 through 2011. Headboat effort data were provided by K. Brennan and K. Fitzpatrick from NMFS Southeast Fisheries Science Center in Beaufort, NC.

Proportional fishing effort was calculated as the total numbers of trips reported on logbook trip reports for a given trip-type in a given region, divided by the total number of headboat trips reported in the same region. To obtain the sample weight (W_t):

$$W_t = (N_t/N) / (n_t/n)$$

Where N_t/N is the number of trips of type t divided by total trips reported on logbook trip reports, and n_t/n is the number of trips of type t in the sample population divided by the total number of sampled trips. Trip-types with $W_t < 1$ are down weighted to account for oversampling and trip-types with $W_t > 1$ are inflated to account for undersampling.

No multi-day charter trips were sampled, and weights were not generated for charter samples.

Characterization of Discards:

Fish mid-line lengths assigned to one cm length bin categories (40 cm bin = fish 39.6 cm to 40.5 cm) and the number of lengths in each length bin category were summed by region, trip-type, and disposition (harvested and discarded).

For fish observed from headboats, counts of fish in each length bin were multiplied times the sample weight (W_t) for each trip-type and sample region. The weighted proportion of fish in a length bin (p_x) was calculated as follows:

$$p_x = \frac{(\sum L_H)W_H + (\sum L_Q)W_Q + (\sum L_F)W_F + (\sum L_M)W_M}{\sum_{bin\ (i=1....n)} [(\sum L_H)W_H + (\sum L_Q)W_Q + (\sum L_F)W_F + (\sum L_M)W_M]}$$

Where L_H equals the number of fish in length bin x for a given disposition in a given region observed during half-day trips (H); and W_H is the weighting factor for half-day trips in the same region. $Q = 3/4$ -day trips, $F =$ full-day trips, and $M =$ multi-day trips. The denominator is the sum of all numerators for length bin 1 to length bin n .

Discard proportions were calculated by summing the numbers of observed fish harvested and discarded in each region by year and trip type. For headboat samples, sums were multiplied by the weighting factor for each respective trip-type. The overall discard proportion (p_d) for headboats was calculated as:

$$p_d = \text{weighted discard sum} / (\text{weighted discard sum} + \text{weighted harvest sum})$$

Fish discarded by release condition were summed by trip type and region and multiplied by the weighting factor for each trip-type. The weighted sum of discarded fish in each release condition category was divided by the weighted sum for all fish discarded in all release condition categories to get proportions of discards in each release condition category.

Volunteer Red Snapper Catch Card Program

Pre-printed postage-paid catch logs were freely distributed to red snapper private boat recreational anglers in Florida. Catch logs were given out at fishing access points, by participating bait and tackle shops, through organized fishing clubs, during public fishing shows, and other venues. A downloadable version is available at:

<http://www.myfwc.com/media/202837/OnlineCatchCard.pdf>

The catch log was designed for anglers to take with them during a future recreational fishing trip and included a matrix for anglers to keep a running tally of red snapper by size category as they are caught and released during a single fishing trip. Size categories (in inches) were: up to 10"; >10" to 12"; >12" to 14"; >14" to 16"; and >16" total length. Other data fields on the catch log include the number of anglers on the boat, number of red snapper harvested, distance fished from shore, and depth fished (including minimum, maximum, and majority of fishing time).

To test for significant differences in the size distributions of discards reported on catch logs versus fish observed on headboats and charter boats, red snapper discards from at-sea observations were placed in the same size categories as fish reported on catch logs. Frequency counts in each size category were arranged into a contingency table as follows, where S1-S5 represents the five size categories:

		Headboat					Charter Boat					Private Boat				
		S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
Year	Season															
2009	Open															
	Closed															
2010	Open															
	Closed															
....															

Cochran-Mantel-Haenszel statistics based on mean scores were calculated using PROC FREQ in SAS (Stokes et al 2000) to compare mean rank scores for headboats, charter boats and private boats, controlling for year and season.

Results

At-Sea Observer Trips

The number of sampled trips by month and trip duration are provided in tables 1-4. Length frequency histograms for harvested and released (discarded) red snapper by year are presented for Florida headboats (Figure 3), Florida charterboats (Figure 4), Alabama headboat (Figure 5) and Texas charterboats (Figure 6). The cumulative percentages by length bin for harvested and released fish are provided in Figures 7-9. Summary statistics for length frequencies are provided

in tables 5-6. Release conditions for discarded red snapper are provided in table 7-9, and harvest ratios are provided in tables 10-11. Depth distributions for sampled trips are provided in Figures 10-12.

Volunteer Red Snapper Catch Card

The number of volunteer angler catch logs received by year and month are provided in Table 12, and average depth and distance fished from shore reported on catch logs are provided in Tables 13-14. Figure 13 shows the distribution of red snapper discards by size category that were reported each year for months when the fishery was open to harvest and months when harvest was closed.

The percent of discards plotted by size category for private boats, charter boats, and headboats is illustrated in Figure 14. The Kruskal-Wallis statistic (labeled “row mean scores differ” in Figure 15) controlling for year and season was 0.0052 with two degrees of freedom and a p-value of 0.9974, indicating that the size distribution of red snapper discards reported by volunteer anglers fishing from private boats do not differ from what was observed on charter boats and headboats during at-sea surveys.

References:

Stokes, M.E., C.S. Davis, G.G.Koch. 2000. Categorical Data Analysis Using the SAS System, Second Edition. SAS Institute and Wiley Interscience.

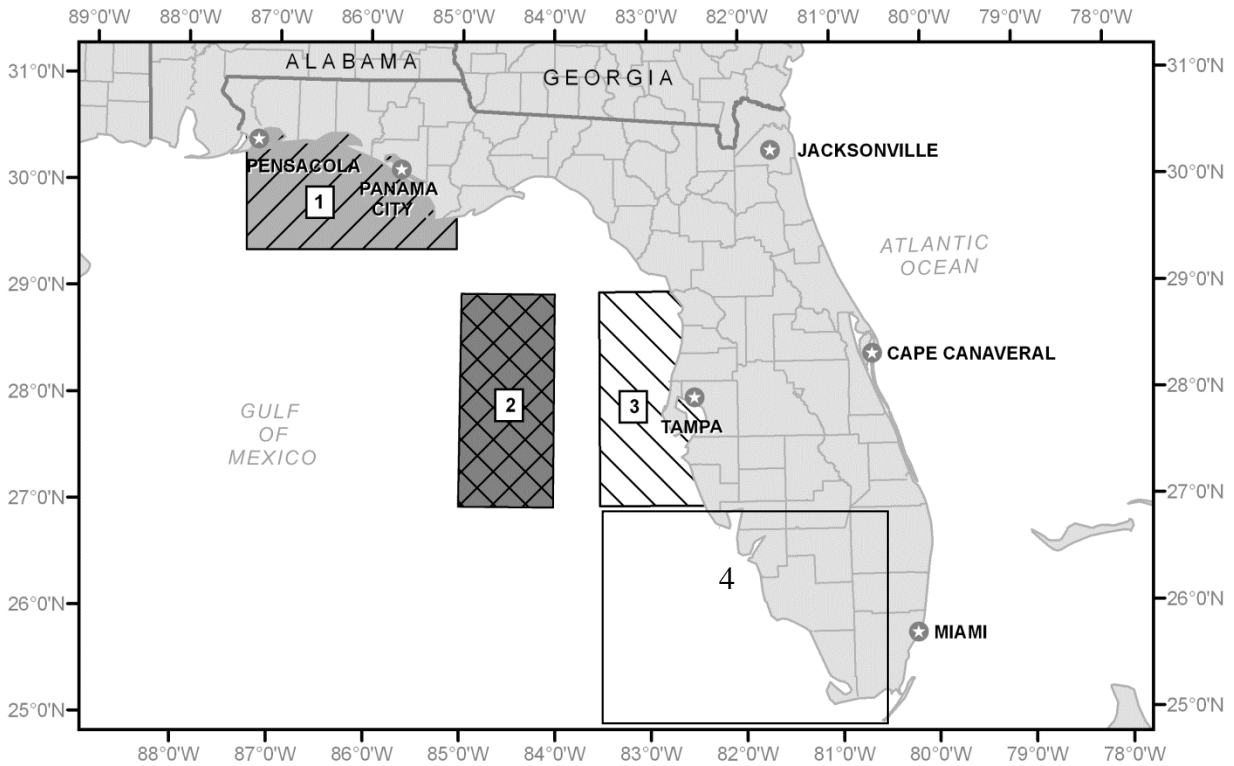


Figure 1. Areas in Florida with at-sea observer coverage. Area 1 is the northwestern panhandle region, area 2 is where multi-day trips from the western central region took place, and area 3 is where single-day trips from the western central region took place. From 2005-2007, headboats only were sampled from areas 1, 2, 3 and 4. From June 2009 through 2012, headboats and charter boats were surveyed from areas 1, 2 and 3.

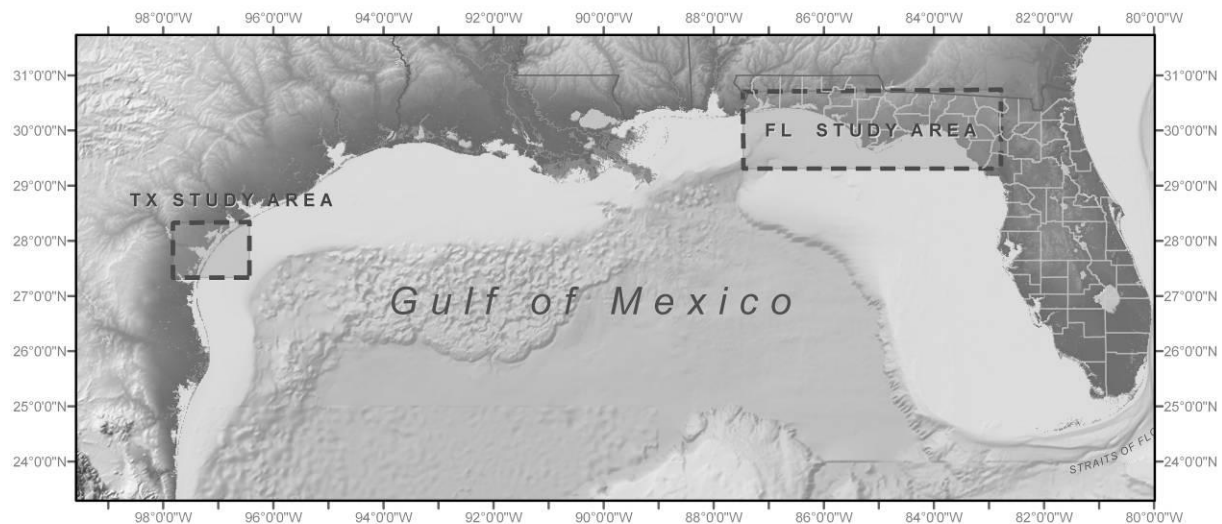


Figure 2. Area of at-sea observer coverage on charter vessels with federal reef fish permits during a logbook pilot study conducted from September 2010 through August 2011.

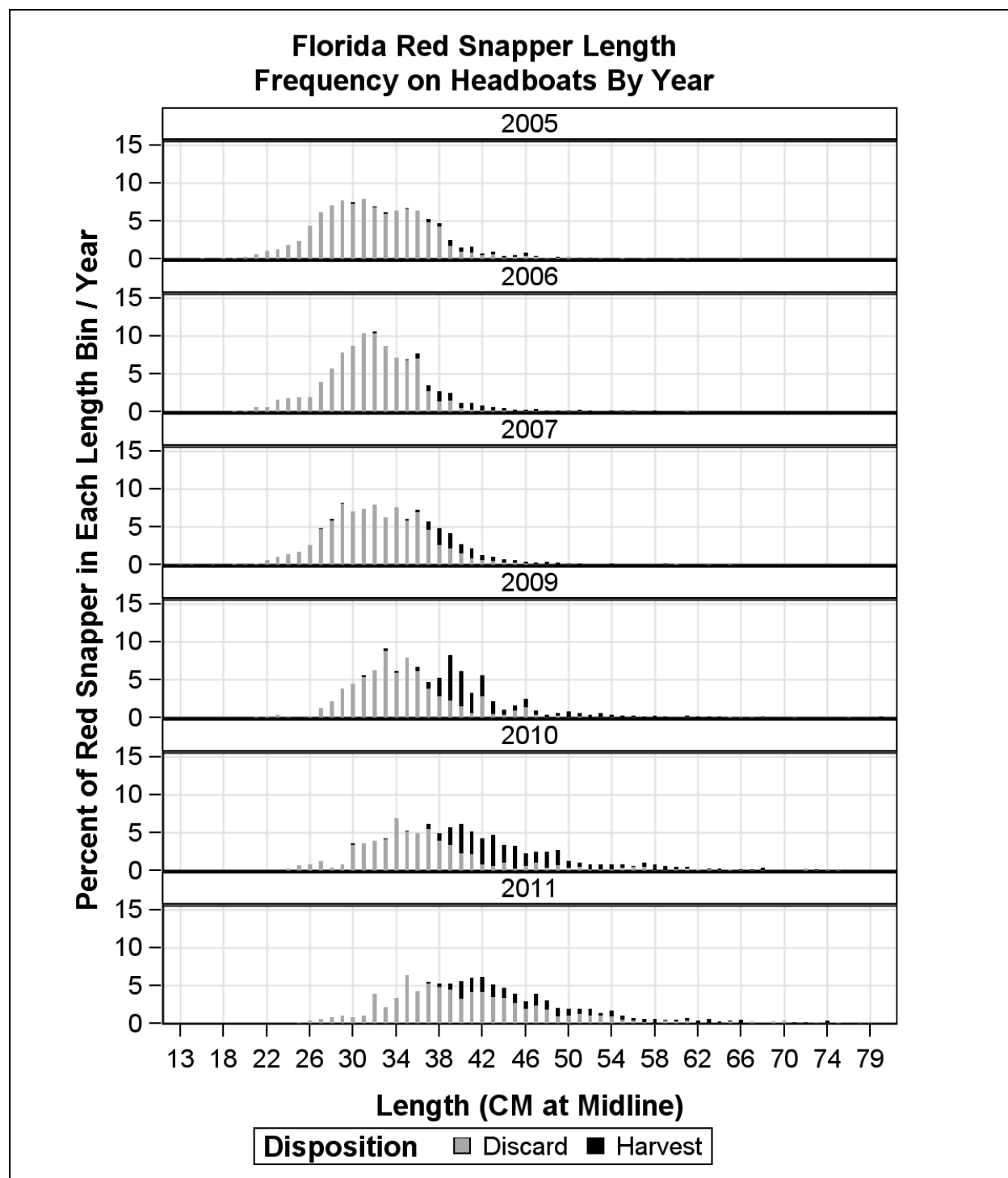


Figure 3. Length frequencies of harvested and released red snapper measured by at-sea observers on headboats in Florida 2005-2011, weighted by trip type. Harvest includes fish that were released dead.

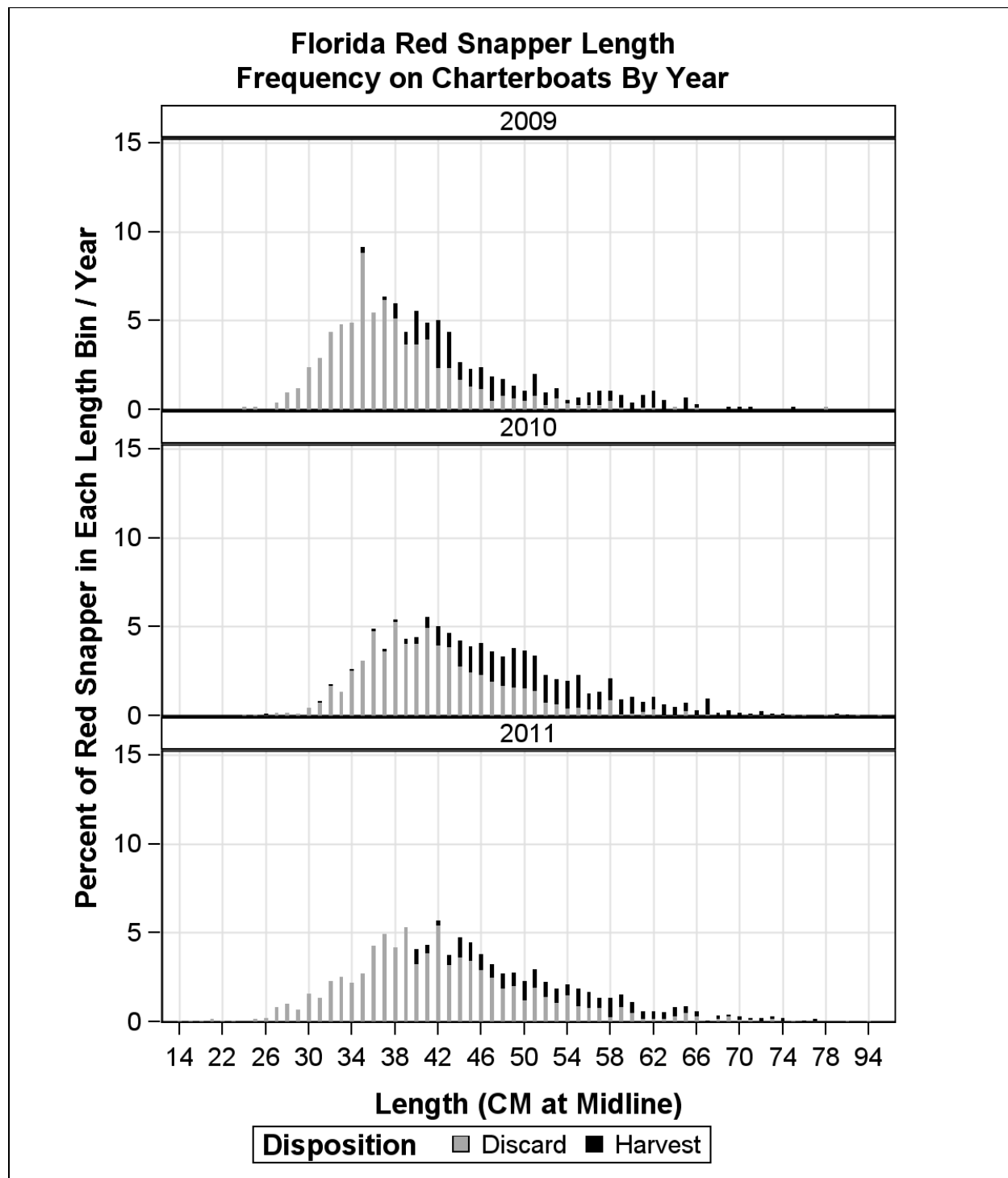


Figure 4. Length frequency of harvested and released red snapper measured by at-sea observers on charterboats in Florida 2009-2011. Harvest includes fish that were released dead.

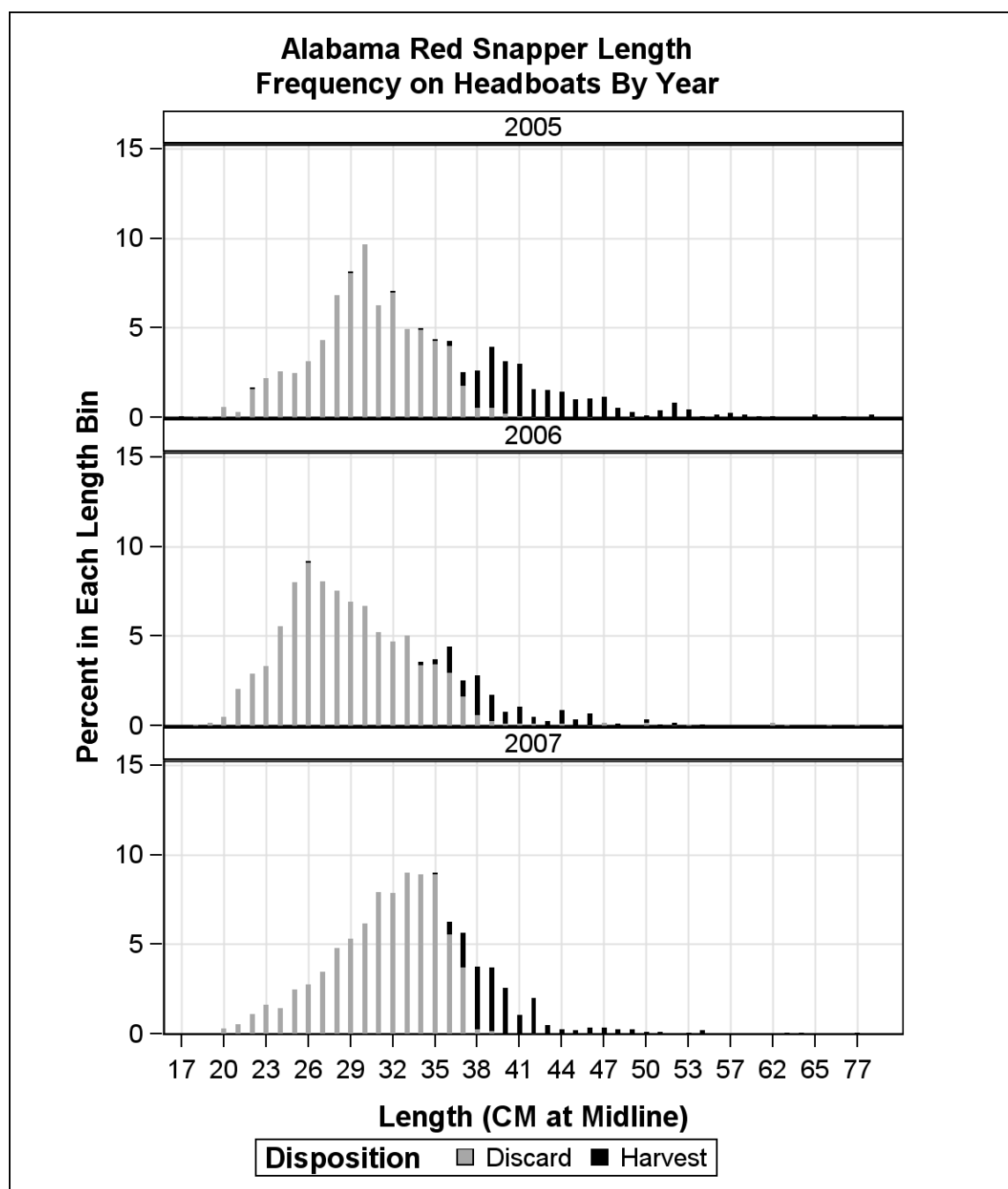


Figure 5. Length frequency of harvested and released red snapper measured by at-sea observers on headboats in Alabama, 2005-2007, weighted by trip type. Harvest includes fish that were released dead.

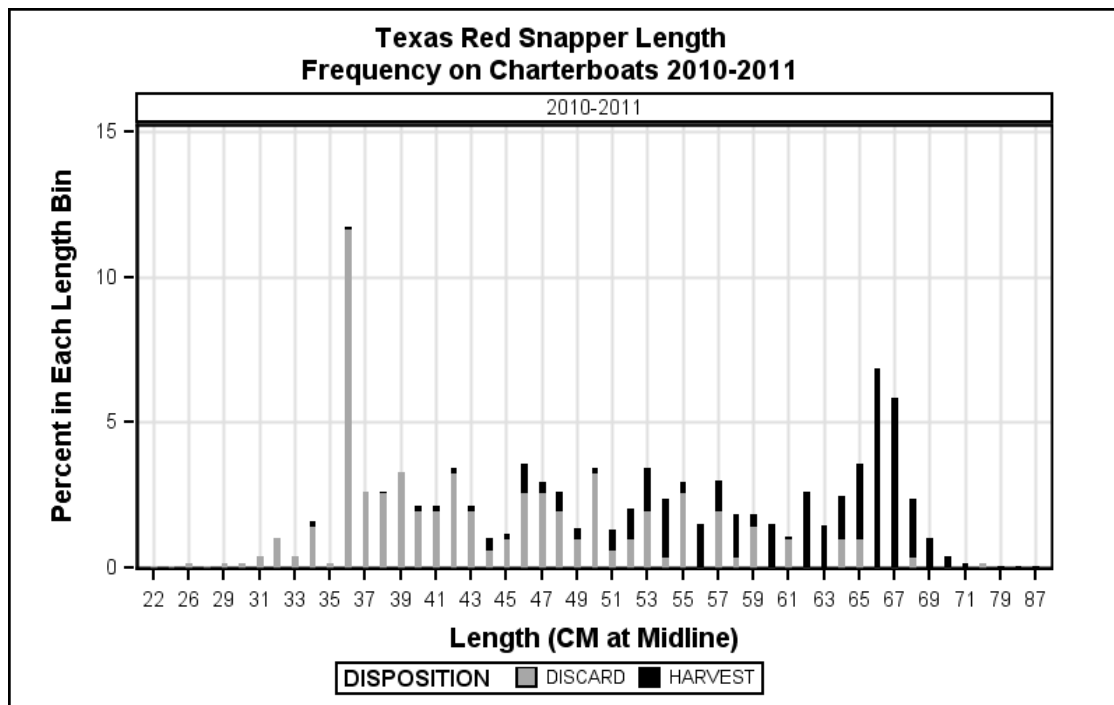
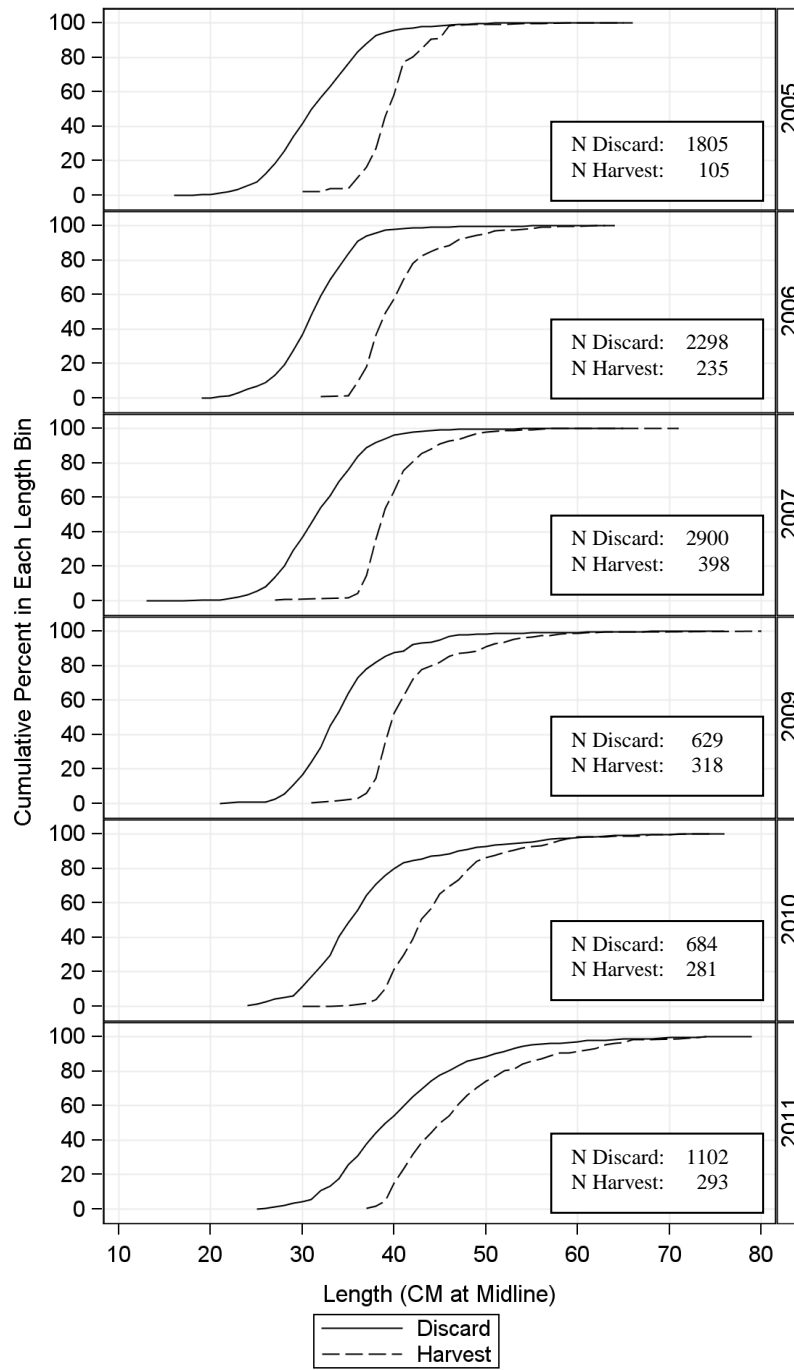


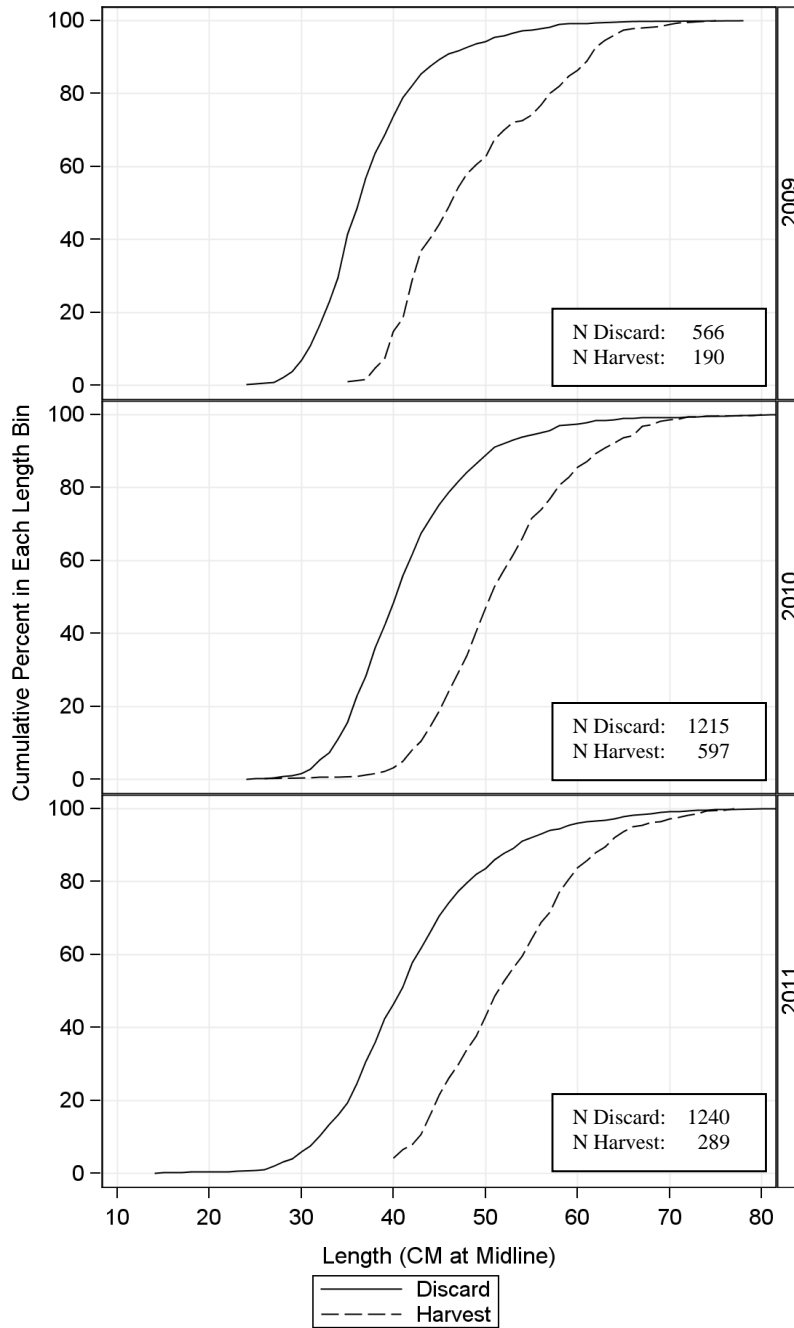
Figure 6. Length frequency of harvested and released red snapper measured by at-sea observers on federally permitted charterboats operating from Corpus Christi, Texas, from September 2010 through August 2011. Harvest includes fish that were released dead.

Weighted Cumulative Percent Red Snapper Length
Distribution For Harvested and Discarded Fish On Headboats



measured by at-sea
d, weighted by

Cumulative Percent Red Snapper Length Distribution
For Harvested and Discarded Fish on Charterboats



measured by at-sea
lead.

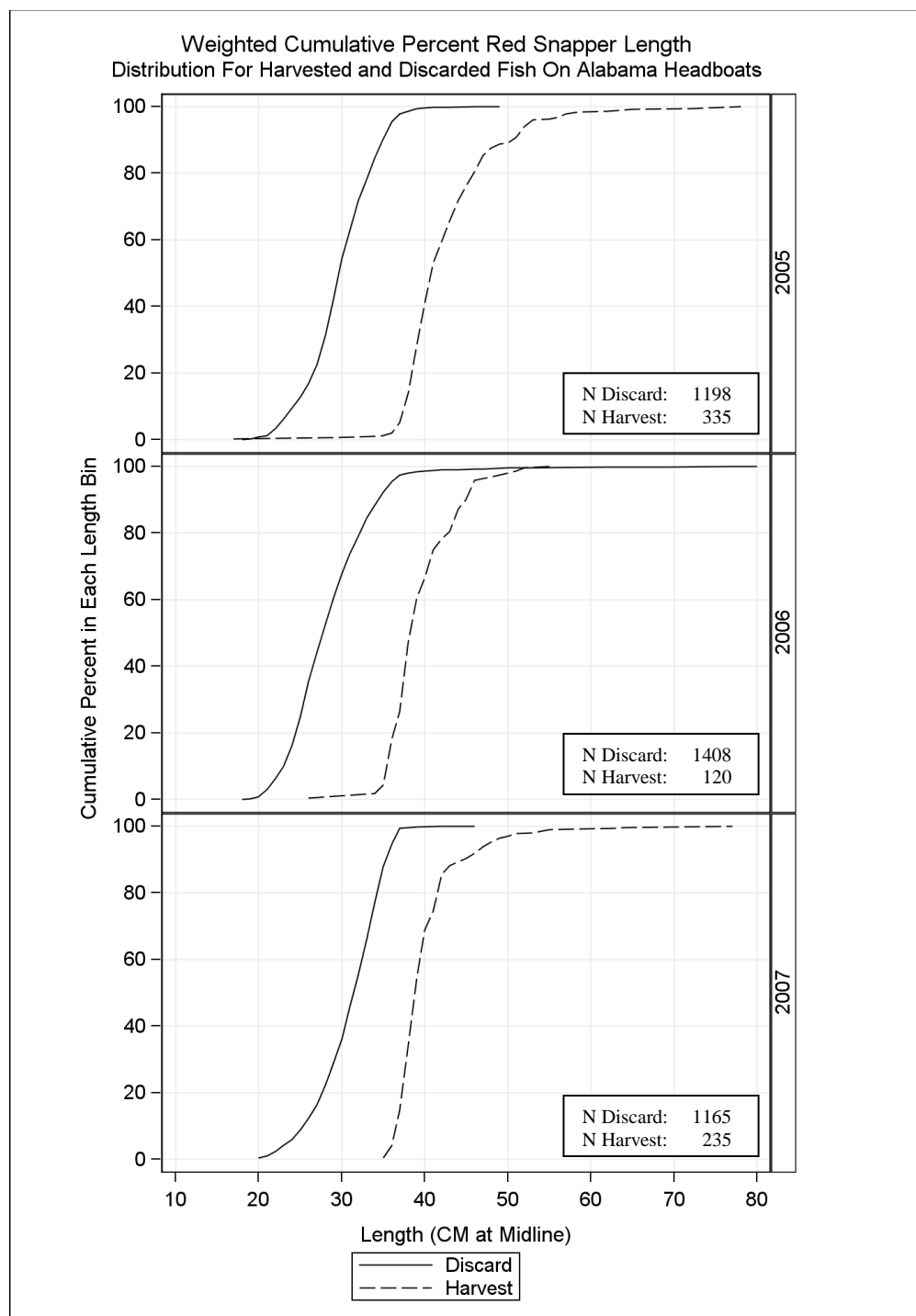


Figure 9. Cumulative length frequency of harvested and released red snapper measured by at-sea observers on headboats in Alabama, weighted by trip type. Harvest includes fish that were released dead.

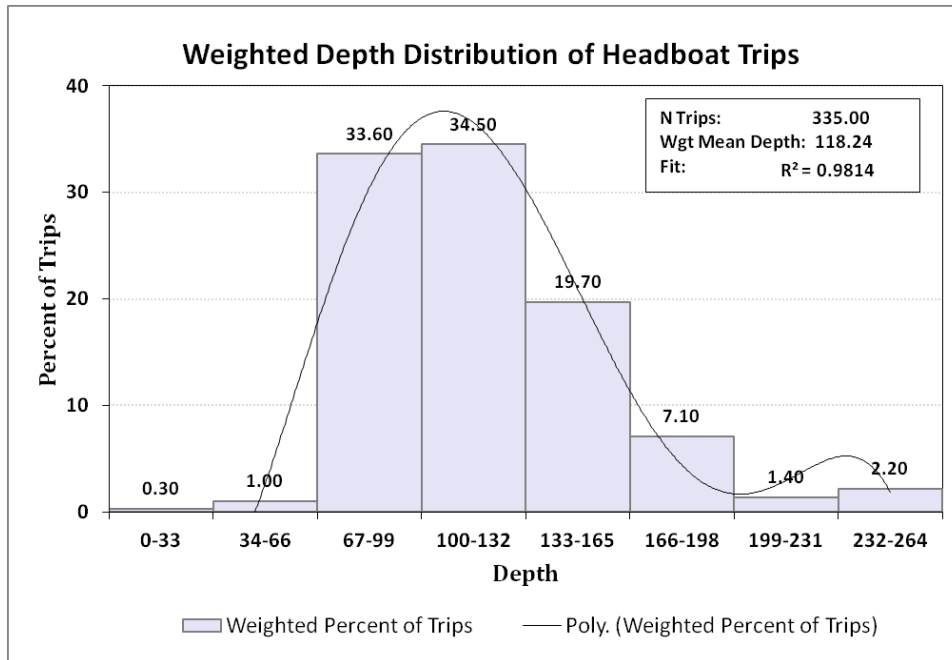


Figure 10. Weighted distribution of depths (in feet) of positive red snapper headboat trips in Florida, 2005-2011.

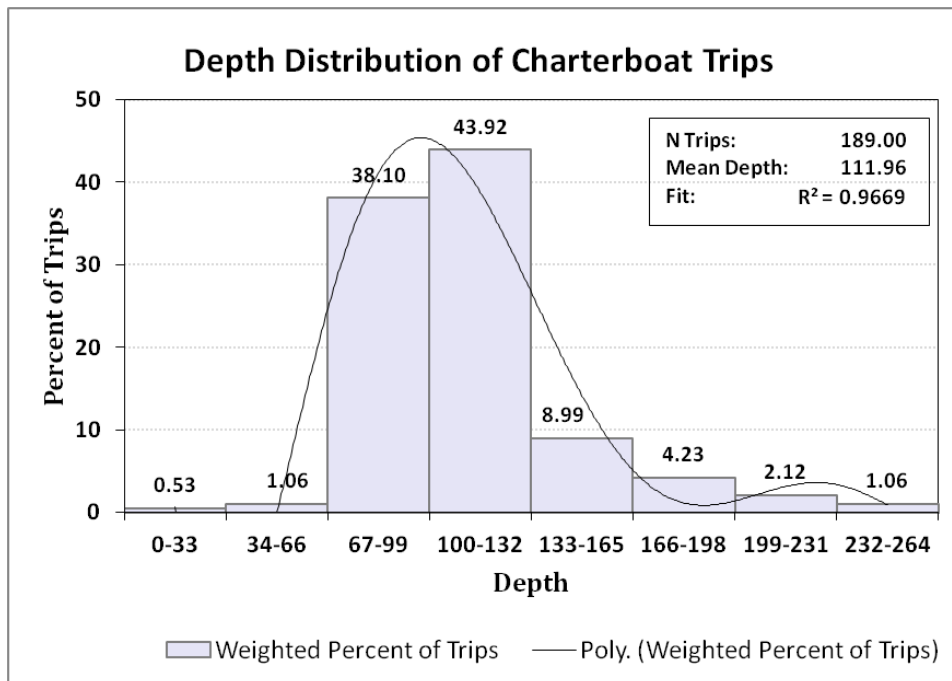


Figure 11. Distribution of depths (in feet) of positive red snapper charter boat trips in Florida, 2009-2011.

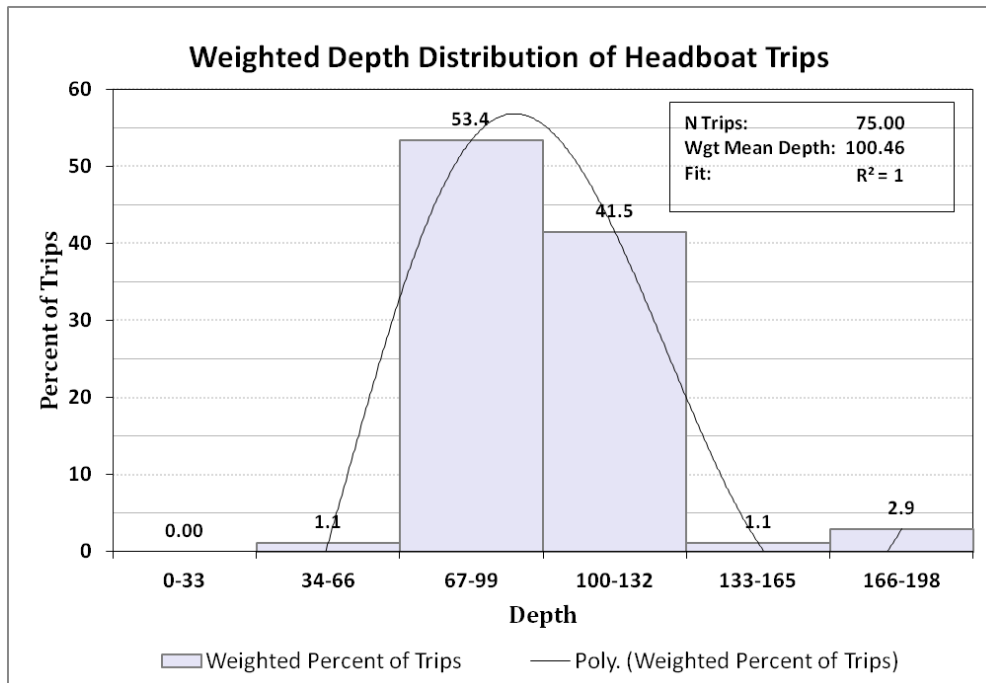


Figure 12. Weighted distribution of depths (in feet) of positive red snapper headboat trips in Alabama, 2005-2007, weighted by trip type.

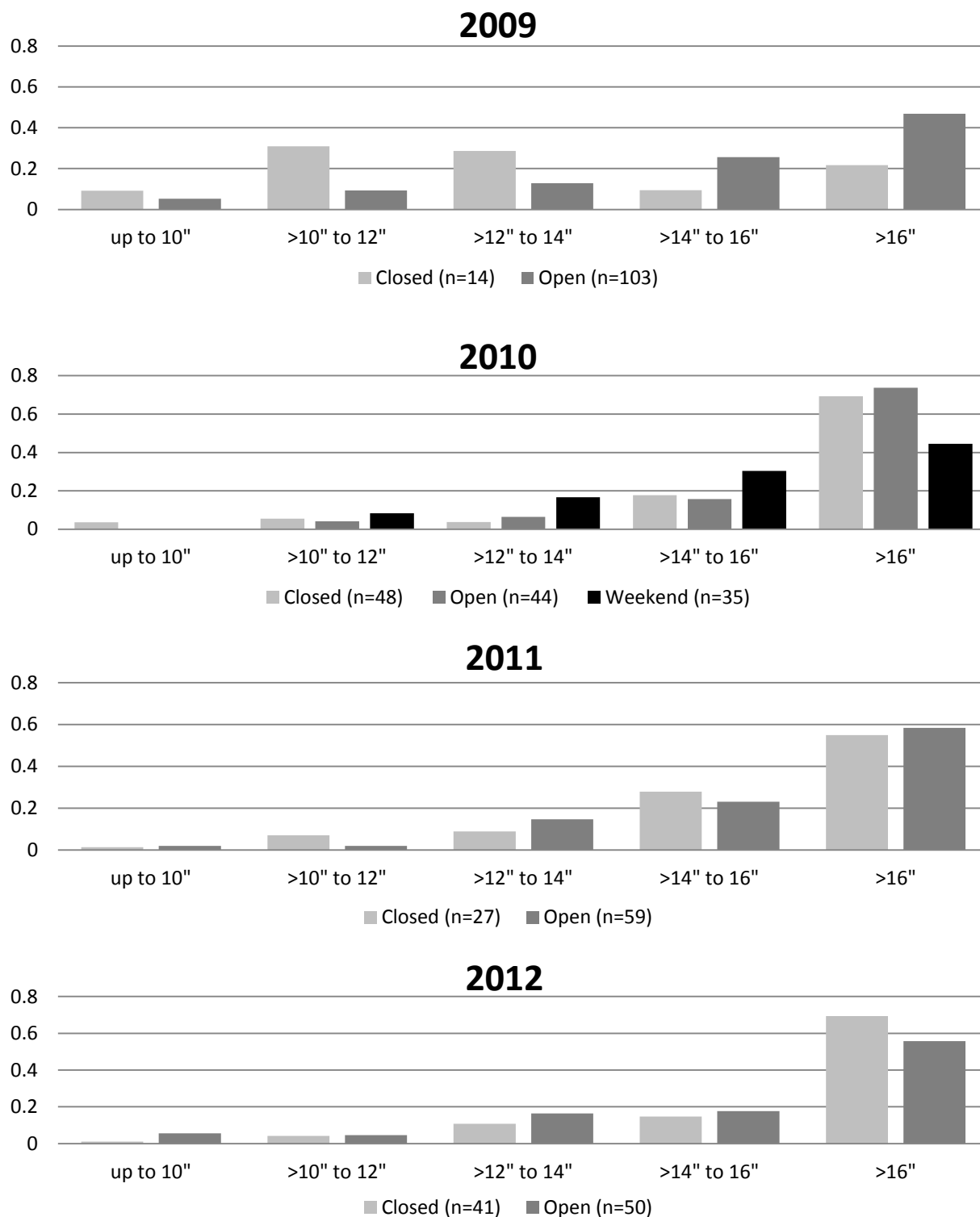


Figure 13. Proportion of red snapper releases by size class reported on volunteer angler catch logs during regular open harvest seasons, closed seasons, and the 2010 supplemental weekend season. N = number of catch logs received in each season and year. Conversions: up to 10" = ≤ 25 cm length bins; >10"-12" = 26-30cm bins; >12"-14" = 31-35cm bins; >14"-16" = 36-40cm bins; >16" = ≥ 41 cm bins.

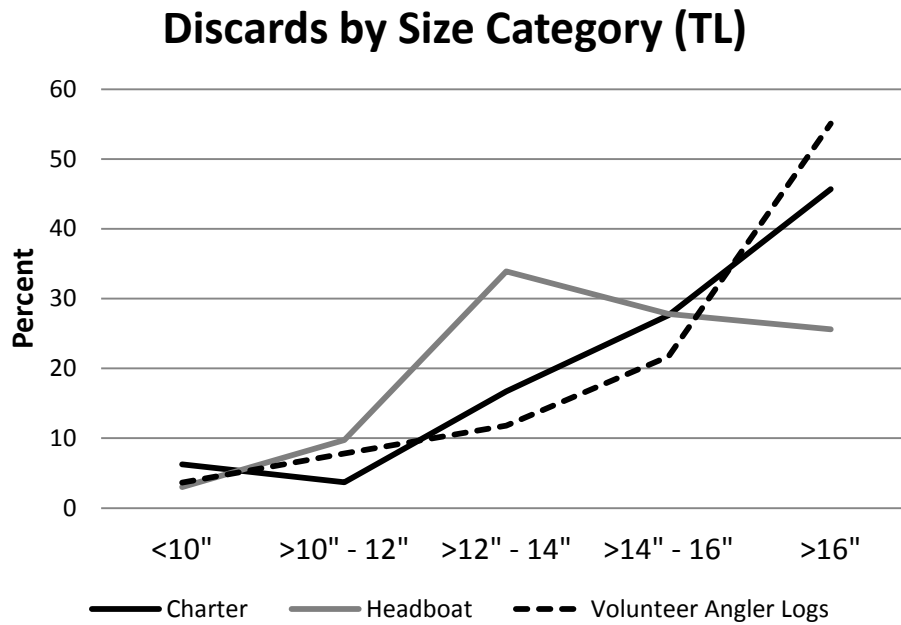


Figure 14. Percent of red snapper discards by size category from charter boat and headboat at-sea surveys and from volunteer angler catch logs, pooled for all years.

The SAS System

Summary Statistics for vesseltype by size
Controlling for year and season

Cochran-Mantel-Haenszel Statistics (Based on Rank Scores)

Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.0002	0.9886
2	Row Mean Scores Differ	2	0.0052	0.9974

Total Sample Size = 119

The NPAR1WAY Procedure

**Wilcoxon Scores (Rank Sums) for Variable size
Classified by Variable vesseltype**

vesseltype	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
P	39	2074.00	2086.50	149.535909	53.179487
C	33	1803.50	1765.50	143.580080	54.651515
H	34	1793.50	1819.00	144.737643	52.750000

Average scores were used for ties.

Kruskal-Wallis Test

Chi-Square 0.0737

DF 2

Pr > Chi-Square 0.9638

Figure 15. SAS Output. The null hypothesis that the distribution of red snapper size classes observed in charter (C) and headboat (H) vessels, and reported by volunteer anglers fishing from private boats (P) are not significantly different was not rejected.

Table 1. Florida sampled headboat at-sea observer trips by month, year, and trip duration for 2005-2007.

FLORIDA		MONTH												YEARLY TOTAL
HEADBOATS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
YEAR		1	2	2	2	3	1	2	5	1	1	1	2	23
2005	HALF DAY													
2005	THREE/QUARTER DAY	0	6	6	6	6	10	9	5	6	9	7	4	74
2005	FULL DAY	0	1	1	4	2	1	1	0	2	2	1	1	16
2005	MULTIDAY	0	1	0	2	3	2	2	2	2	2	1	3	20
2005	MONTHLY TOTAL	1	10	9	14	14	14	14	12	11	14	10	10	133
2006	HALF DAY	2	3	1	5	4	1	2	5	2	1	2	1	29
2006	THREE/QUARTER DAY	7	7	9	5	8	7	7	6	8	6	6	9	85
2006	FULL DAY	0	0	3	2	0	5	1	1	1	1	1	0	15
2006	MULTIDAY	1	2	2	2	1	2	3	3	2	2	1	2	23
2006	MONTHLY TOTAL	10	12	15	14	13	15	13	15	13	10	10	12	152
2007	HALF DAY	2	3	3	3	3	3	3	2	0	2	2	0	26
2007	THREE/QUARTER DAY	6	5	6	6	7	4	5	7	9	7	7	10	79
2007	FULL DAY	1	1	2	1	1	3	1	1	0	1	0	0	12
2007	MULTIDAY	1	1	2	1	1	2	1	2	1	4	5	3	24
2007	MONTHLY TOTAL	10	10	13	11	12	12	10	12	10	14	14	13	141

Table 2. Florida sampled headboat at-sea observer trips by month, year, and trip duration for 2009-2011. Sampling of Florida headboats was not conducted from Jan. 2008 to May 2009.

FLORIDA		MONTH												YEARLY TOTAL
HEADBOATS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
YEAR		0	0	0	0	0	0	3	1	1	0	1	2	8
2009	HALF DAY													
2009	THREE/QUARTER DAY													
2009	FULL DAY													
2009	MULTIDAY	0	0	0	0	0	0	1	2	1	2	1	1	8
2009	MONTHLY TOTAL	0	0	0	0	0	15	14	11	9	8	10	6	73
2010	HALF DAY	0	1	0	0	3	1	5	2	1	0	0	0	13
2010	THREE/QUARTER DAY	4	3	3	6	3	5	3	5	7	6	1	2	48
2010	FULL DAY	1	2	2	1	0	4	5	1	1	1	3	0	21
2010	MULTIDAY	1	1	1	2	0	3	1	0	1	0	0	2	12
2010	MONTHLY TOTAL	6	7	6	9	6	13	14	8	10	7	4	4	94
2011	HALF DAY	0	0	2	1	5	4	2	2	1	4	1	8	30
2011	THREE/QUARTER DAY	5	7	6	6	3	5	7	6	5	5	6	7	68
2011	FULL DAY	0	0	0	1	0	6	0	0	1	0	0	0	8
2011	MULTIDAY	0	1	0	3	0	3	2	1	1	2	1	1	15
2011	MONTHLY TOTAL	5	8	8	11	8	18	11	9	8	11	8	16	121

Table 3. Florida Sampled charterboat at-sea observer trips by month, year, and trip duration for June 2009-December 2011.

FLORIDA		MONTH												YEARLY TOTAL
CHARTERBOATS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
YEAR		0	0	0	0	0	1	0	0	1	0	1	1	4
2009	HALF DAY	0	0	0	0	0	5	3	5	9	4	3	1	30
2009	THREE/QUARTER DAY	0	0	0	0	0	2	8	1	5	3	4	1	24
2009	FULL DAY	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	MULTIDAY	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	MONTHLY TOTAL	0	0	0	0	0	8	11	6	15	7	8	3	58
2010	HALF DAY	1	0	2	1	0	3	2	2	1	1	4	1	18
2010	THREE/QUARTER DAY	3	4	4	3	5	5	5	4	6	11	7	2	59
2010	FULL DAY	0	1	1	0	6	6	1	0	0	8	5	0	28
2010	MULTIDAY	0	1	0	0	0	1	0	0	0	0	0	0	2
2010	MONTHLY TOTAL	4	6	7	4	11	15	8	6	7	20	16	3	107
2011	HALF DAY	0	3	6	1	4	4	1	0	4	4	2	3	32
2011	THREE/QUARTER DAY	3	5	4	6	8	8	7	10	8	5	5	8	77
2011	FULL DAY	2	0	0	2	0	5	2	1	1	4	1	1	19
2011	MULTIDAY	0	0	0	0	0	0	0	0	1	0	0	0	1
2011	MONTHLY TOTAL	5	8	10	9	12	17	10	11	14	13	8	12	129

Table 4. Alabama sampled headboat at-sea observer trips by month, year, and trip duration for 2005-2007. No multiday trips were sampled in Alabama.

ALABAMA		MONTH												YEARLY TOTAL
HEADBOATS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
YEAR		0	0	0	0	0	0	0	0	0	0	1	0	1
2005	HALF DAY	0	0	0	0	0	0	0	0	0	0	1	0	1
2005	THREE/QUARTER DAY	0	0	2	4	6	8	6	3	0	1	0	0	30
2005	FULL DAY	0	0	0	0	6	8	0	3	0	0	0	0	17
2005	MONTHLY TOTAL	0	0	2	4	12	16	6	6	0	1	1	0	48
2006	HALF DAY	0	0	0	3	8	6	0	4	0	0	0	0	21
2006	THREE/QUARTER DAY	0	0	3	3	8	6	6	4	3	1	0	0	34
2006	FULL DAY	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	MONTHLY TOTAL	0	0	3	6	16	12	6	8	3	1	0	0	55
2007	HALF DAY	0	0	0	0	0	6	6	3	0	0	0	0	15
2007	THREE/QUARTER DAY	0	0	2	1	1	6	6	3	2	1	0	0	22
2007	FULL DAY	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	MONTHLY TOTAL	0	0	2	1	1	12	12	6	2	1	0	0	37

Table 5. Lengths for red snapper observed on headboats and charter boats in Florida.

		Headboats					Charter boats			
		N	Min	Max	Mean	Weighted Mean	N	Min	Max	Mean
2005	Harvest	105	30	65	42	40				
	Discard	1805	16	66	32	32				
2006	Harvest	235	32	64	43	41				
	Discard	2298	19	63	32	32				
2007	Harvest	398	27	71	42	40				
	Discard	2900	13	65	33	32				
2009	Harvest	629	21	76	39	35	190	35	75	49
	Discard	318	31	80	47	42	566	24	78	38
2010	Harvest	684	24	75	42	37	597	26	80	52
	Discard	281	30	76	47	45	1215	24	97	42
2011	Harvest	1102	25	79	44	41	289	40	77	53
	Discard	293	37	74	48	47	1240	14	94	42

Table 6. Lengths for red snapper observed on headboats in Alabama.

		N	Min.	Max.	Mean	Weighted Mean
2005	Harvest	335	17	78	42	43
	Discard	1198	18	49	31	30
2006	Harvest	120	26	55	40	40
	Discard	1408	18	80	29	29
2007	Harvest	235	35	77	40	40
	Discard	1165	20	46	31	31

Table 7. Released conditions on Florida headboats from 2005-2011 weighted by trip type.

FL	RELEASE CONDITION ON FLORIDA HEADBOATS									
	GOOD		FAIR		POOR		DEAD		EATEN	
	N	%	N	%	N	%	N	%	N	%
YEAR										
2005	1454	74.97	223	12.63	114	6.29	60	2.70	68	3.40
2006	2098	83.03	133	5.18	112	4.42	84	3.61	90	3.76
2007	2794	85.01	149	4.77	191	5.98	44	1.25	98	3.00
2009	513	80.49	44	11.38	61	6.69	4	0.51	4	0.94
2010	591	87.48	48	6.67	31	2.99	3	0.62	7	2.24
2011	1019	94.30	39	3.42	32	1.87	0	0	3	0.41

Table 8. Release conditions on Florida charterboats from 2009-2011.

FL	RELEASE CONDITION ON FLORIDA CHARTERBOATS									
	GOOD		FAIR		POOR		DEAD		EATEN	
	N	%	N	%	N	%	N	%	N	%
YEAR										
2009	460	81.13	55	9.70	46	8.11	3	0.53	3	0.53
2010	1112	91.67	54	4.45	42	3.46	2	0.16	3	0.25
2011	1185	95.87	34	2.75	13	1.05	0	0	4	0.32

Table 9. Gulf Coast Red Snapper release conditions on Alabama headboats from 2005-2007 weighted by trip type.

AL	RELEASE CONDITION ON ALABAMA HEADBOATS									
	GOOD		FAIR		POOR		DEAD		EATEN	
	N	%	N	%	N	%	N	%	N	%
YEAR										
2005	684	49.97	281	27.26	80	8.74	78	8.03	61	5.99
2006	649	43.52	291	19.64	82	5.78	162	9.90	197	21.16
2007	579	47.47	344	32.21	61	5.34	126	11.52	50	3.45

Table 10. Numbers of harvested and discarded fish observed from headboats and charter boats in Florida and discard percentage.

	Headboats					Charter boats		
	N harvest	N discards	Weighted harvest	Weighted discards	% Discards	N harvest	N discards	% Discards
2005	105	1805	65	1791	3.52			
2006	235	2298	162	2296	6.57			
2007	398	2900	351	3090	10.19			
2009	318	629	224	592	27.49	190	566	25.13
2010	281	684	185	339	35.23	597	1215	32.95
2011	293	1102	188	687	21.45	289	1240	18.90

Table 11. Numbers of harvested and discarded fish observed from headboats in Alabama and discard percentage.

HEADBOATS	N harvest	N discards	Weighted harvest	Weighted discards	% Discards
YEAR	335	1198	318	1036	23.47
2005					
2006	120	1408	138	1174	10.51
2007	235	1165	198	921	17.72

Table 12. Number of volunteer angler red snapper catch logs received by month and year. NW=northwest Florida, BB=big bend, TB=greater Tampa Bay area.

Year	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2009	NW						14	29	48	9	7	6	1	114
	BB													
	TB						2		1	7				10
2010	NW	2	1	6	20	13	27	6	1		24	3	1	104
	BB				1		5			1	8		2	17
	TB						6							6
2011	NW			1	7	3	26	19	9	2				67
	BB			2	2	1	5	2						12
	TB						6	1						7
2012	NW	7	3	15	4	12	26	18						85
	BB						4	1						5
	TB						1							1

Table 13. Mean and mean minimum and maximum distance (in miles) from shore fished by volunteer angler participants during red snapper open and closed seasons.

	Closed Season			Open Season			Fall Weekend Season		
Year	N	Mean	Range	N	Mean	Range	N	Mean	Range
2009	9	11.1	7.2-12.9	101	17.0	11.8-18.3			
2010	47	15.3	9.9-17.4	40	17.9	13.6-20.2	35	9.6	7.5-10.3
2011	26	15.0	10.4-17.5	59	16.3	12.6-19.0			
2012	39	8.5	5.5-10.4	50	10.3	8.7-11.3			

Table 14. Mean and mean minimum and maximum depth (in feet) fished by volunteer angler participants during red snapper open and closed seasons.

	Closed Season			Open Season			Fall Weekend Season		
Year	N	Mean	Range	N	Mean	Range	N	Mean	Range
2009	9	86.1	75.0-97.8	101	104.3	80.5-115.0			
2010	47	106.7	81.2-115.7	40	87.5	78.4-96.0	35	82.0	72.9-90.2
2011	26	101.5	77.9-113.7	59	95.0	80.4-103.5			
2012	39	81.2	70.8-93.9	50	86.3	79.8-93.1			