Vermilion Snapper Length Frequencies and Condition of Released Fish from At-Sea Headboat Observer Surveys in the South Atlantic, 2004 to 2007.

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From 2004 to 2007, headboats in South Carolina and North Carolina participated in an at-sea observer survey. The east coast of Florida and the Florida Keys also participated from 2005 to 2007. The purpose of the Headboat At-Sea Survey was to collect detailed information on both harvested and discarded fish during recreational fishing trips on board working headboats. In this region, most headboat trips engage in bottom fishing for reef fish species, including vermilion snapper, and other bottom dwelling fish. In southeast Florida, some headboats drift fish to target pelagic species. These vessels are not anchored and drift broadside with the currents as anglers fish with free-lines on the down-current side of the vessel, and Spanish mackerel may be caught on these types of trips. This report is a summary of information collected on the size, release condition, and final disposition of vermilion snapper and Spanish mackerel collected by trained observers during at-sea surveys on board headboats. While this information is specific to the recreational headboat fishery, it provides valuable information on the size of discarded fish from the recreational fishery, which historically has not been collected in other surveys of recreational fishing.

Sample Methods

Vessels were randomly selected each month from five sample regions: the Florida Keys (Monroe County), southeast Florida (Dade to Indian River counties), northeast Florida (Broward to Duval counties), South Carolina, and North Carolina. Operators from selected vessels were contacted by contractors or state biologists and a trip was arranged. 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. Release conditions were not recorded in South Carolina or North Carolina.

Dispostion 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 conditions were 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 Atlantic and Gulf coast regions.

Area fished for North Carolina, South Carolina, southeast and northeast Florida was coded as:
1: 3 miles or less from shore; or
2: more than 3 miles from shore

Area fished for the Florida Keys 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.

Data Analysis

Catch data from the Keys, southeast Florida, and northeast Florida were pooled while data from Georgia, South Carolina, and North Carolina were treated independently. For annual length frequency graphs for vermilion snapper, lengths (in mm fork length) were converted to total length (TL=1.09*(FL)+7.21, n=11,232, r2=0.98, FL range 172-503mm, provided by Jennifer Potts for SEDAR 17). Total lengths were then converted to centimeters and placed in 1 cm length bin categories (100 cm bin = fish 99.51cm to 100.50cm). The sample size, mean, minimum, and maximum length for each coast and year are also reported. Also presented are the number and percent of released fish by release condition. Data from 2004 to 2007 were used for NC and SC, and data from 2005 to 2007 were used for east Florida.

Results

Spanish Mackerel

Spanish mackerel were not frequently encountered in headboat at-sea observer surveys. Most headboats use methods that target primarily bottom fish species, such as snappers, groupers, and seabass. Sample sizes for Spanish mackerel in the headboat at-sea survey time series are provided in Table 1.

Table 1: Spanish mackerel sample sizes and lengths from at-sea observer surveys.

Region	Disposition	Number of Fish	Number Measured	Length Range (mm FL)	Average Length (mm FL)
East FL	Harvested	20	20	361-654	534.95
	Used for bait	8	3	171-600	
	Released	4	2	465-487	
SC	Harvest	2	2	306-361	333.50
	Released	-	-	-	-
NC	Harvest	2	2	323-420	371.50
	Released	1	1	247	

Length frequency histograms for harvested and released (discarded) vermilion snapper for each sample year are presented in figures below. Summary statistics are presented in Table 2. Release conditions for observed released fish from Florida are presented in Table 3. The fraction and percent of vermilion snapper released alive are presented in Table 4. The fraction and percent of vermillion snapper released alive, reported on logbook reports in the NMFS Southeast Region Headboat Survey, are reported in Table 5 for comparison.

Figure 1: East Florida length frequencies of released and harvested vermilion snapper.

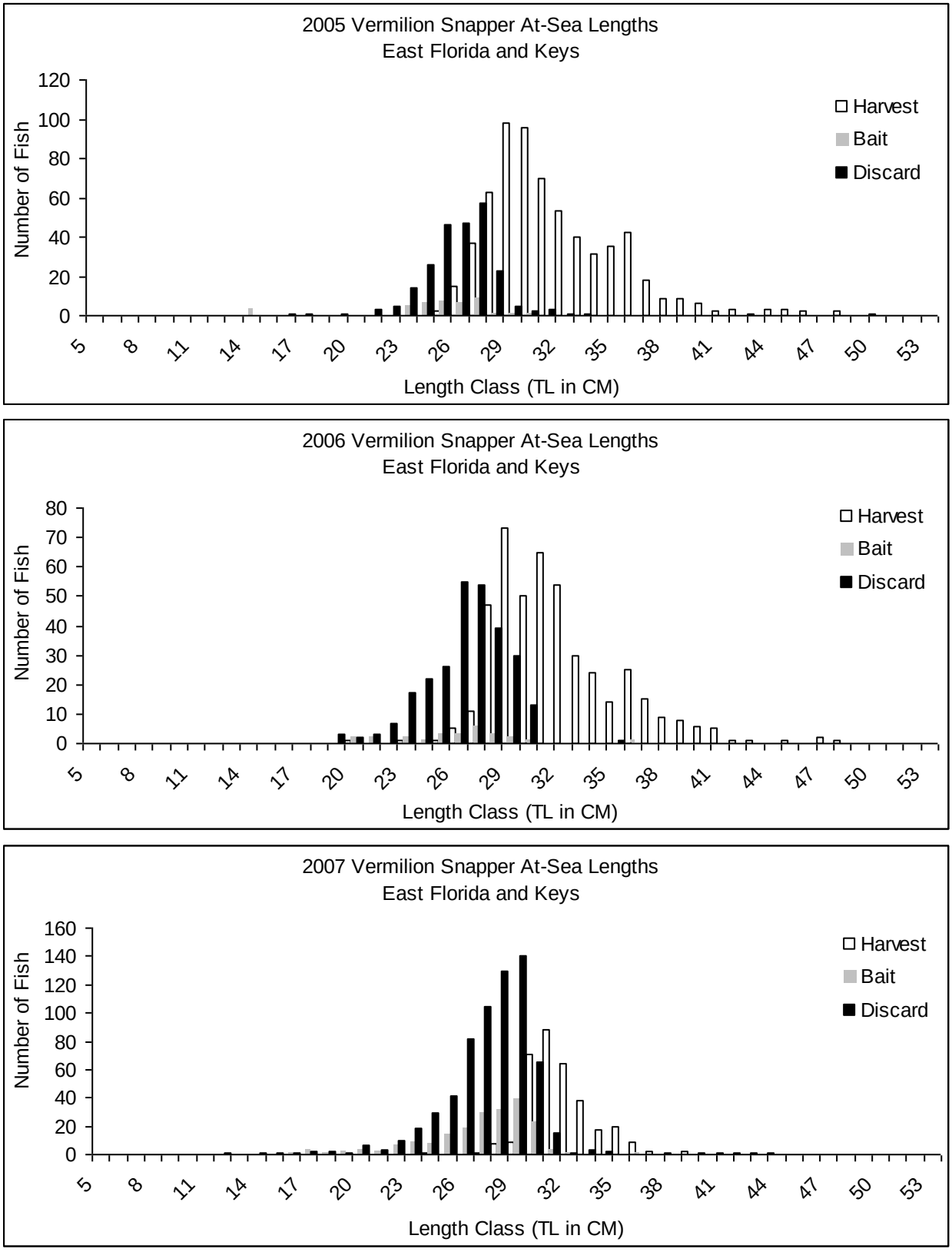

Figure 2: South Carolina length frequencies of released and harvested vermilion snapper.

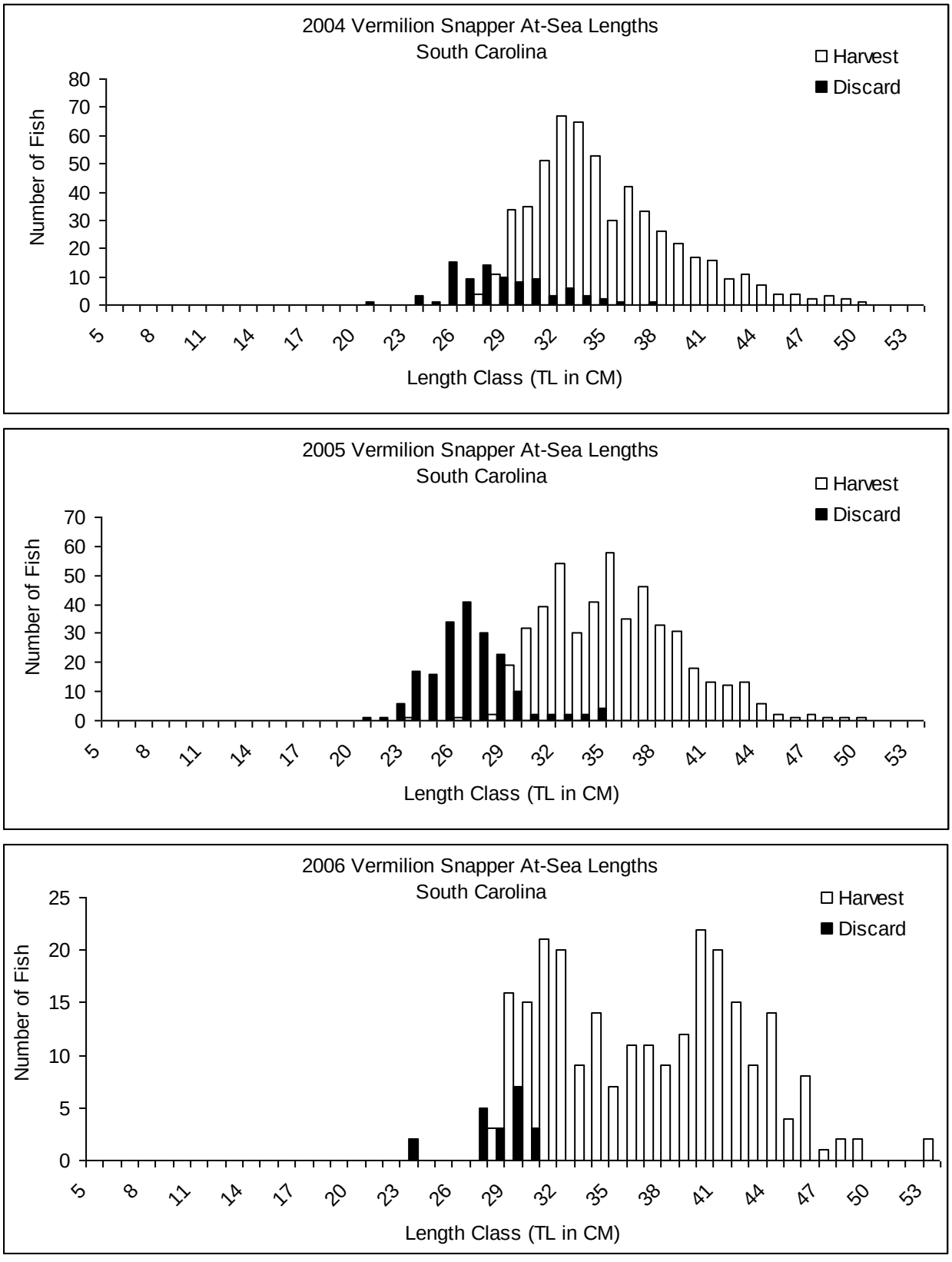

Figure 2:

South Carolina length frequencies of released and harvested vermilion snapper, continued.

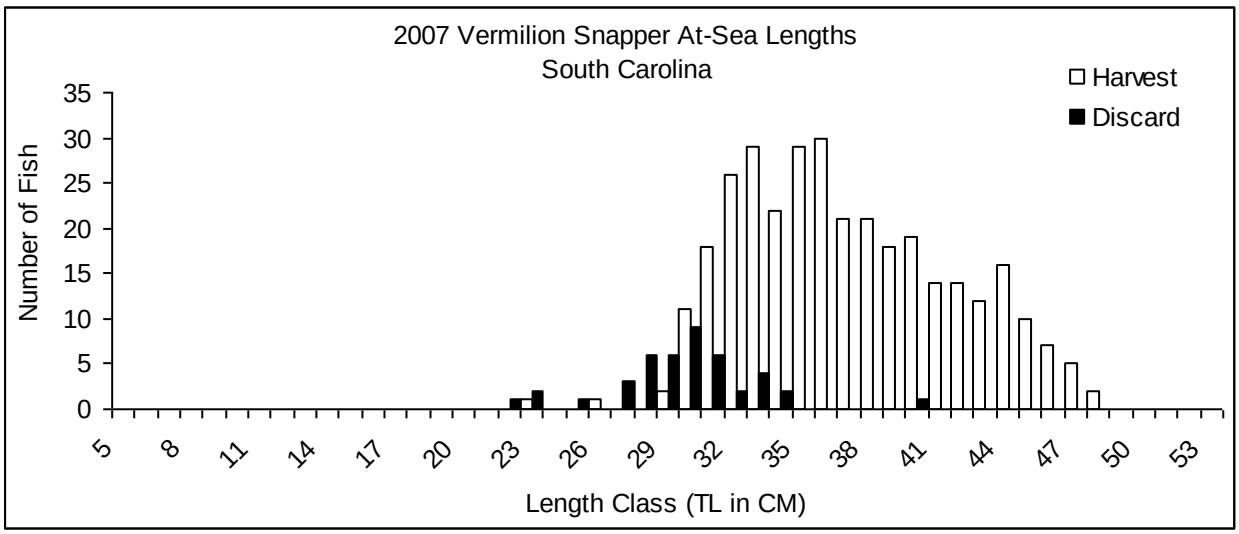

Figure 3: North Carolina length frequencies of released and harvested vermilion snapper.

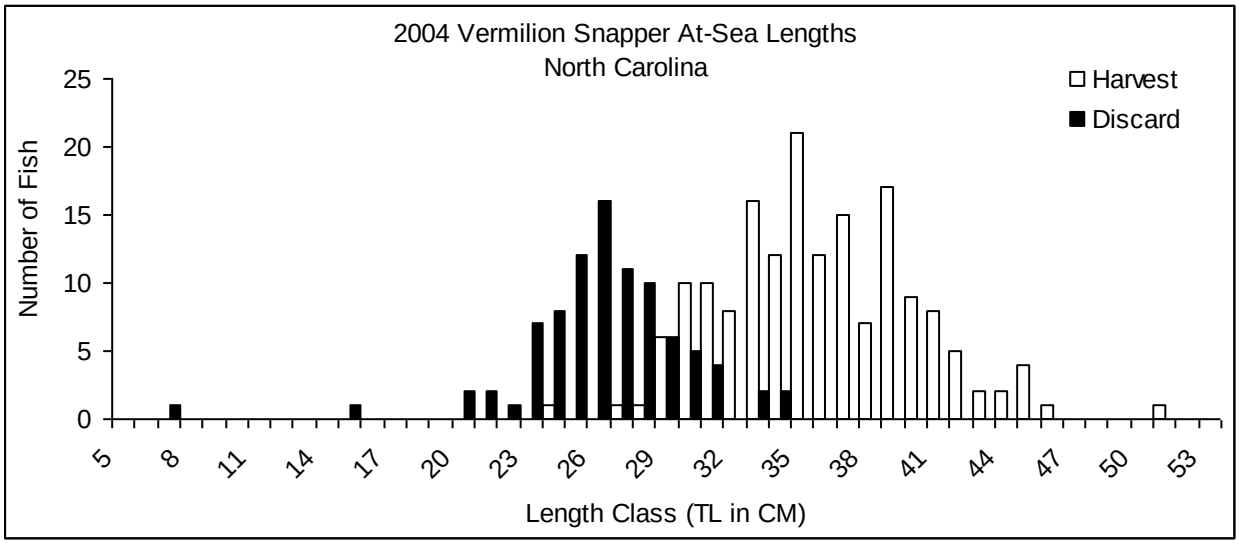

Figure 3: North Carolina length frequencies of released and harvested vermilion snapper, continued.

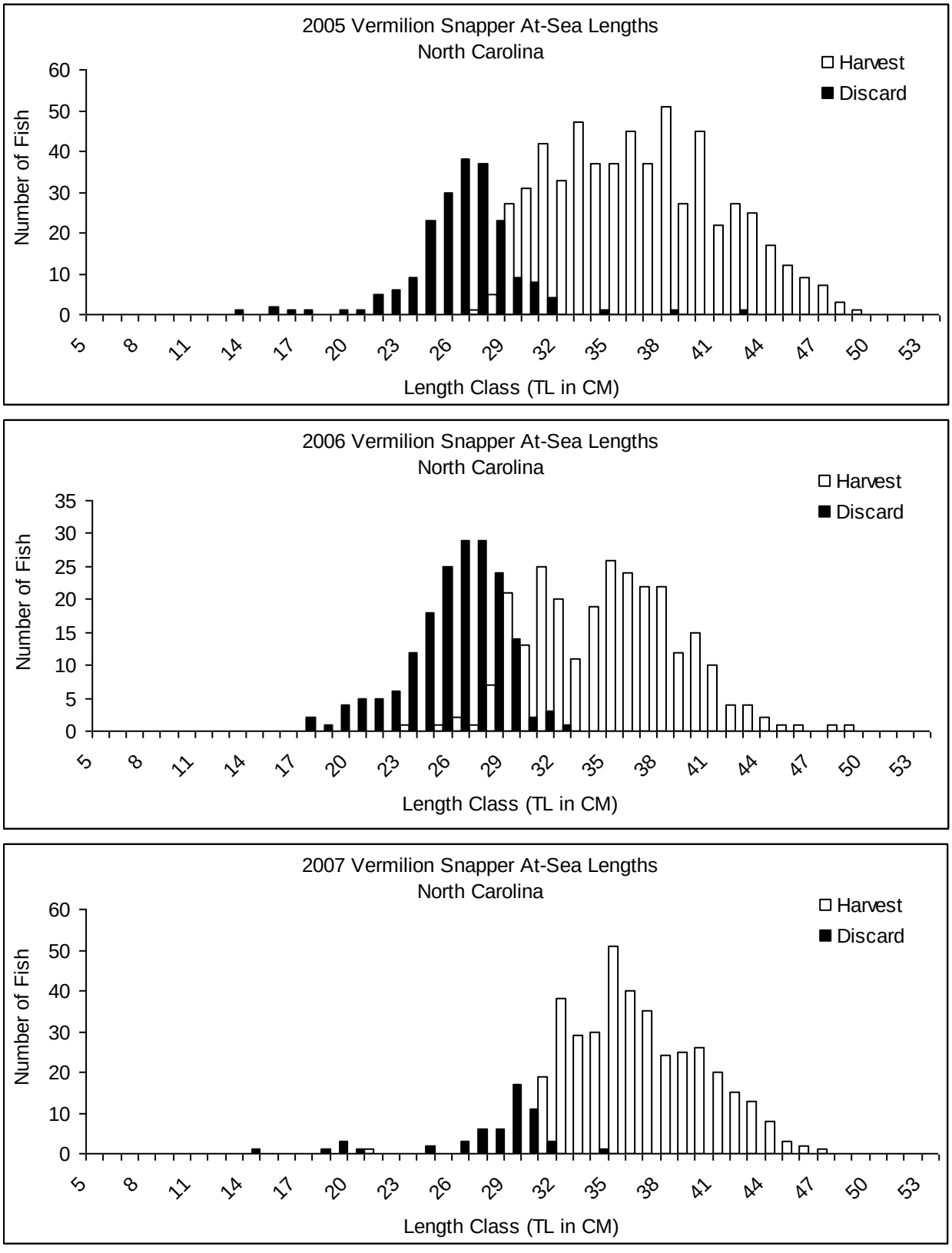

Figure 4: South Atlantic (FL, SC, NC only) length frequencies of released and harvested vermilion snapper; 2005-07.

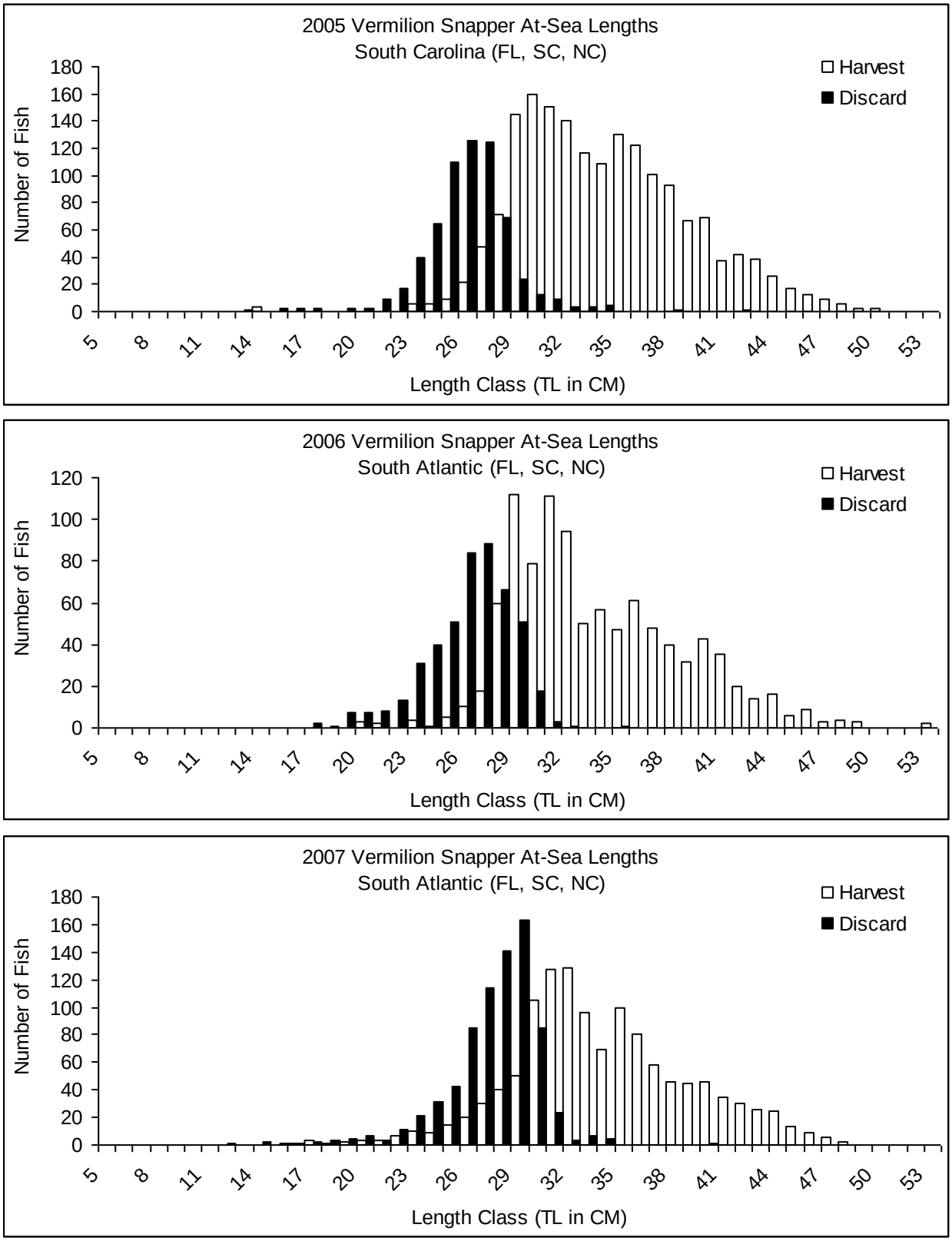

Table 2. Summary statistics for Atlantic coast vermilion snapper lengths. Harvest includes fish kept, used for bait, or discarded dead.

Region	Year	Disposition	Number measured	Minimum (mm TL)	Maximum (mm TL)	Mean (mm TL)
East FL	2005	Harvested	772	139.10	498.80	311.13
	2006	Harvested	534	118.39	481.36	313.93
	2007	Harvested	595	161.99	443.21	299.06
	2005	Released alive	259	151.09	333.12	258.08
	2006	Released alive	308	183.79	353.83	263.23
	2007	Released alive	755	116.21	337.48	272.49
Ga	2006	Harvested	4	321	427	367.18
	2007	Harvested	9	356	444	409.78
	2006	Released Alive	6	385	308	297.70
	2007	Released Alive	-	-	-	-
SC	2004	Harvested	549	271	497	345.95
	2005	Harvested	492	228	508	352.74
	2006	Harvested	247	280	535	370.35
	2007	Harvested	328	225	477	370.51
	2004	Released alive	86	202	368	280.03
	2005	Released alive	191	205	344	261.56
	2006	Released alive	20	231	303	279.38
	2007	Released alive	43	216	400	297.05
NC	2004	Harvested	169	242	505	358.22
	2005	Harvested	588	269	491	364.88
	2006	Harvested	266	235	487	348.41
	2007	Harvested	380	213	467	365.46
	2004	Released alive	90	73	342	261.13
	2005	Released alive	202	127	416	259.24
	2006	Released alive	180	165	324	255.69
	2007	Released alive	55	140	342	276.18
South Atlantic[1]	2005	Harvested	1854	139.10	507.52	339.19
	2006	Harvested	1051	118.39	534.77	336.12
	2007	Harvested	1312	161.99	477.00	336.91
	2005	Released alive	650	127.11	415.96	259.40
	2006	Released alive	514	165.26	353.83	261.62
	2007	Released alive	853	116.21	399.61	273.97

[1] South Atlantic only includes East Florida, South Carolina and North Carolina for the years 2005-07.

Table 3. Vermilion snapper release conditions (collected for east Florida only).

	Good		Fair		Poor		Eaten		Dead	
Year	N	%	N	%	N	%	N	%	N	%
2005	284	87.4	26	8.0	7	2.2	2	0.6	6	1.8
2006	362	91.9	19	4.8	10	2.5	0	0.0	3	0.8
2007	762	93.3	20	2.4	28	3.4	4	0.5	3	3.7

Table 4: Ratio and percent of vermilion snapper released alive from sampled trips in the headboat at-sea observer survey.

Region	Year	Number Released Live	Number Killed	Ratio[1]	Percent[2]
East FL	2005	1,448	6,002	0.2412	19.44
	2006	2,046	6,508	0.3144	23.92
	2007	1,518	5,390	0.2816	21.97
SC	2004	576	87	0.1510	13.12
	2005	494	193	0.3907	28.09
	2006	249	25	0.1004	9.12
	2007	333	61	0.1832	15.48
NC	2004	210	92	0.4381	30.46
	2005	588	201	0.3418	25.48
	2006	270	180	0.6667	40.00
	2007	382	59	0.1545	13.38
South Atlantic[3] (FL, SC, NC)	2005	2,530	6,396	0.3956	28.34
	2006	2,565	6,713	0.3821	27.65
	2007	2,233	5,510	0.4053	28.84
	Total	7,328	18,619	0.3936	28.24

[1] Release ratio = Total fish released alive / Total fish killed (harvested, used for bait, or released dead).

[2] Release percent = Total fish released alive / total fish (released alive and killed) * 100.

[3] Georgia was excluded from the South Atlantic summary because there were no samples in 2005 and very few observations in 2006 or 2007.

Table 5: Ratio and percent of vermilion snapper released alive from logbook reports in the NMFS Southeast Region Headboat Survey.

Region	Year	Number Released Live	Number Killed	Ratio[4]	Percent[5]
East FL/GA	2004	25633	126956	0.202	16.8
	2005	15480	83100	0.186	15.7
	2006	20338	90976	0.224	18.3
SC	2004	52912	145917	0.363	26.6
	2005	23925	101815	0.235	19.0
	2006	37472	167842	0.223	18.25
NC	2004	4718	62443	0.076	7.0
	2005	11117	93179	0.119	10.7
	2006	15227	89497	0.170	14.5

[4] Release ratio = Total fish released alive / Total fish killed (harvested, used for bait, or released dead).
[5] Release percent = Total fish released alive / total fish (released alive and killed) * 100.