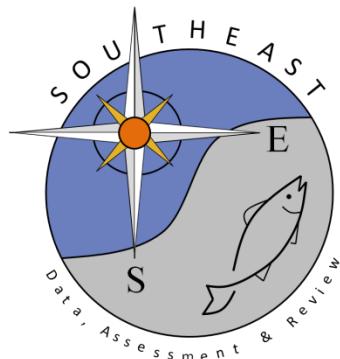


# General Recreational Survey Data for Spanish Mackerel in the South Atlantic

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SEDAR78-WP03

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**SEDAR 78-WP-03**  
**General Recreational Survey Data for Spanish Mackerel in the**  
**South Atlantic**

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General recreational catch estimates for Spanish Mackerel are compiled from the Marine Recreational Information Program (MRIP). Details on MRIP can be found in SEDAR68-DW-13.

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Parameters for data prepared for SEDAR 78 recreational catch data:

- Species: Spanish Mackerel
- Year Range: 1981 - 2020
- Geographic Range: South Atlantic states from eastern Florida to North Carolina, including Virginia to Maine.
- Fishing Modes: Charter, Private, Shore, Headboat (Virginia to Maine)
- MRIP Survey Methodology: Fully calibrated estimates that take into account the change in the Fishing Effort Survey, the redesigned Access Point Angler Intercept Survey, and the For Hire Survey
- MRIP Data Gaps from COVID: Missing 2020 intercepts were imputed from all APAIS data collected in 2018 and 2019 from the same strata as the 2020 data gap, with original sample weights reduced by a factor of two to account for using two years of data (Cody 2021).
- SEFSC Data QAQC: Size records above an allowable (max size) threshold are excluded from average weight estimation and the summary tables included in this working

paper (Tables 7-11). For SEDAR 78 Spanish Mackerel, this includes any weights heavier than 13.6059 pounds.

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#### Catch and Sample Size Information for Particular Domains:

Domains were selected based on strata-level catch estimates (year-state-mode-wave-area) that have a disproportionately large contribution to those total (annual) catch estimates that appear relatively large/small, as compared to adjacent years. Selected domains are more likely to be high catch estimates given the inherent zero-boundary constraint in all catch/effort data ( $\geq 0$ ) that complicates identification of low catch estimates.

- 1981 landings estimate: 4,174,889 fish
  - Strata: FLE, Shore, wave 5, and ocean  $\leq 3$  miles
  - Intercept Records: a total of 19 angler trips that resulted in a landings estimate of 2,159,870 fish

<i>Catch Observation</i>	<i>Minimum</i>	<i>Median</i>	<i>Mean</i>	<i>Maximum</i>
<i>Harvest seen by interviewer</i>	0	1.95	5.03	29
<i>Harvest not seen by interviewer</i>	0	0	0.21	4
<i>Released live fish</i>	0	0	1.11	10

- 2020 landings estimate: 6,382,407 fish
- 2020 discard estimate: 5,289,388 fish
  - Strata: FLE, Shore, wave 1, and inshore
  - Intercept Records: a total of 15 angler trips that resulted in a landings estimate of 1,345,966 fish and a discard estimate of 951,707 fish

<i>Catch Observation</i>	<i>Minimum</i>	<i>Median</i>	<i>Mean</i>	<i>Maximum</i>
<i>Harvest seen by interviewer</i>	0	0	1.27	6
<i>Harvest not seen by interviewer</i>	0	0	1.80	13
<i>Released live fish</i>	0	3	4.27	30

- Strata: FLE, Shore, wave 5, and inshore

- Intercept Records: a total of 2 angler trips that resulted in a landings estimate of 1,297,439 fish and a discard estimate of 591,252 fish
  - One angler trip that harvested 4 Spanish Mackerel (*NOT* seen by interviewer)
  - One angler trip that harvested 7 Spanish Mackerel (*NOT* seen by interviewer) and released 5 live Spanish Mackerel

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Tables

**Table 1.** Annual landings (AB1) and discards (B2) of Spanish Mackerel in numbers of fish by state and year (MRIP).

**Table 2.** Annual landings (AB1) and discards (B2) of Spanish Mackerel in numbers of fish by mode and year (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

**Table 3.** Spanish Mackerel landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel. MRIP Headboat estimates are included from Virginia to Maine.

**Table 4.** Spanish Mackerel discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel. MRIP Headboat estimates are included from Virginia to Maine.

**Table 5.** Total Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, with associated coefficients of variation (CV; Dettloff et al. 2020) by year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel.

**Table 6.** Estimated landings of Spanish Mackerel in pounds whole weight by state and year (MRIP). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).

**Table 7.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by state and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths.

**Table 8.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by state and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish weights.

**Table 9.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by mode and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths. MRIP Headboat estimates are included from Virginia to Maine.

**Table 10.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by mode and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish weights. MRIP Headboat estimates are included from Virginia to Maine.

**Table 11.** Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by year. Summaries include the number of fish for which size information was collected by MRIP (Fish), the number of angler trips from which those fish were sampled (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths and weights.

**Table 12.** Resolution of weight estimates (in pounds whole weight) for South Atlantic Spanish Mackerel by year and hierarchy level (MRIP), defined by **species**, **region**, **year**, **state**, **mode**, **wave**, and **area**. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019). Larger sample sizes therefore allow average weights to be calculated at finer stratifications, the finest being at the srysmwa level (Matter and Rios 2013). Annual summaries include the number of fish for which weight information was collected (Fish) and the landings-in-weight estimates (AB1.lbs) by hierarchy level. As an example, (srysmw) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **species**, **region**, **year**, **state**, **mode**, and **wave** (i.e., weight observations collapsed across areas).

**Table 13.** Recreational Fishing Effort (in angler trips) for South Atlantic anglers by state and year (MRIP).

**Table 14.** Recreational Fishing Effort (in angler trips) for South Atlantic anglers by mode and year (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

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## Figures

**Figure 1.** Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Spanish Mackerel from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the South Atlantic between 1981 and 2003 (MRIP). The charterboat calibration approach is discussed in Dettloff and Matter (2019; SEDAR64-RD-12).

**Figure 2.** MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Spanish Mackerel in the Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish (NMFS).

**Figure 3.** Annual Spanish Mackerel landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2020 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states contributed less than ten percent to the total catch (Fig3a) and were combined for plotting purposes.

**Figure 3a.** Percent of Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2020 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states were combined for plotting purposes.

**Figure 4.** Annual Spanish Mackerel landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2020 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

**Figure 4a.** Percent of Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2020 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

**Figure 5.** Estimates of annual landings for Spanish Mackerel in the South Atlantic, as estimated from MRIP: estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).

**Figure 6.** Annual landings estimates of South Atlantic Spanish Mackerel in thousands of pounds whole weight by hierarchy level (MRIP), defined by **species**, **region**, **year**, **state**, **mode**, **wave**, and **area**. Landings are grouped by the strata at which average weights were estimated, the finest stratification being at the srysmwa level (Matter and Rios 2013). As an example, (srysmw) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **species**, **region**, **year**, **state**, **mode**, and **wave** (i.e., weight observations collapsed across areas). Landings are provided (A) in absolute pounds and (B) as a percentage of total landings-in-weight, which is summarized by year (stacked bar plot) and across all years (pie chart).

**Figure 7.** COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic Spanish mackerel. No 2020 data was imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the 2020 APAIS (RAW) vs. those imputed from 2018 and 2019 intercepts (IMP). (B) Distribution of (log-transformed) Spanish mackerel catch between 2015-2019, in raw 2020 APAIS data, and in 2020 imputations. Refer to Cody (2021) for more information on COVID data gaps in MRIP.

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**Table 1.** Annual landings (AB1) and discards (B2) of Spanish Mackerel in numbers of fish by state and year (MRIP).

Year	FLE		GA		SC		NC		VA		MD		DE	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	3,719,435	625,570	5,037	0	91,223	0	344,209	2,967	0	0	0	0	0	0
1982	2,005,612	56,916	368	0	17,649	0	1,011,646	0	0	0	0	0	0	0
1983	580,992	15,132	5,014	1,740	3,364	0	10,234	0	0	0	0	0	0	0
1984	686,956	29,049	3,543	0	115,088	480	560,122	4,374	0	0	0	0	0	0
1985	210,270	64,392	14,009	0	42,449	4,117	441,911	36,482	0	0	0	0	0	0
1986	591,584	47,542	30,945	1,659	248,196	7,080	883,981	443,209	1,803	0	82	0	0	0
1987	379,259	5,250	23,993	2,933	101,125	2,303	1,042,496	37,246	1,231	5,982	29,049	0	0	0
1988	1,054,262	40,321	5,354	2,685	57,514	60,543	1,512,027	27,821	119,374	0	0	0	0	0
1989	741,390	174,944	10,020	561	289,185	488,483	1,488,279	142,499	44,239	3,722	0	0	0	0
1990	900,151	91,096	46,870	0	382,288	553,493	1,214,951	114,280	51,680	65,629	1,083	0	788	0
1991	2,313,169	665,000	4,869	18	198,845	54,445	1,325,022	248,295	54,775	36,993	18,432	11,520	1,333	35
1992	1,226,005	340,750	38,223	5,282	113,463	54,404	1,070,502	263,109	148,415	42,365	9,941	0	56	0
1993	511,696	340,829	16,239	0	82,307	46,075	778,492	105,237	134,254	96,982	50,693	3,515	0	0
1994	763,148	298,187	18,822	0	189,249	385,788	654,316	293,596	210,642	81,926	19,209	0	0	0
1995	488,001	423,879	19,956	3,370	17,771	12,974	446,096	252,498	49,202	11,270	50,876	2,413	0	0
1996	454,219	532,899	36,276	65	246,358	343,744	558,017	184,163	104,829	68,662	0	0	0	0
1997	539,948	571,049	53,009	0	164,777	208,245	931,783	301,213	76,451	15,201	0	0	0	691
1998	913,266	262,742	87,053	14,315	143,873	43,461	374,592	146,334	33,561	27,213	4,363	2,055	301	0
1999	1,240,185	869,926	21,776	1,017	146,698	321,702	843,940	254,714	138,649	44,140	1,616	0	310	0
2000	1,742,745	1,020,729	41,850	29,315	78,181	193,396	1,132,857	457,116	90,020	141,262	23,376	1,865	0	1,102
2001	1,791,390	563,299	39,951	6,115	105,532	23,918	954,952	339,944	32,739	14,124	15,784	6,582	0	646
2002	2,437,148	1,416,423	4,486	29,892	67,190	30,090	840,240	316,086	6,429	5,746	0	4,802	0	0
2003	2,629,466	1,425,720	17,239	11,472	33,793	775,884	587,871	272,064	35,281	19,342	9,614	8,925	0	0
2004	1,003,606	513,675	8,899	6,394	136,976	184,383	534,720	317,189	55,915	20,698	6,845	876	0	0
2005	1,571,835	870,166	13,838	4,324	160,691	358,107	561,073	303,641	20,510	0	18,227	3,986	0	0
2006	1,015,053	394,000	3,442	25,737	52,180	52,411	439,736	165,098	23	8,375	5,691	1,970	0	0
2007	1,580,556	958,142	40,539	128,578	217,949	183,709	604,518	340,027	48	750	15,493	12,919	0	0
2008	1,329,504	1,198,191	26,218	11,533	94,603	150,102	1,013,980	806,280	163,673	71,016	11,485	17,964	0	0
2009	1,555,880	698,821	10,090	1,786	137,119	84,446	1,480,931	752,806	33,128	70,134	44,430	14,179	0	0
2010	2,525,087	1,352,508	14,132	65	171,442	138,549	927,116	701,634	50,294	92,747	10,153	0	0	0
2011	1,304,040	522,173	13,175	19,926	471,779	389,004	854,554	479,586	90,956	60,450	22,716	0	0	0

Year	FLE		GA		SC		NC		VA		MD		DE	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2012	776,659	254,415	2,824	4,742	258,281	313,339	995,852	591,792	13,960	32,563	14,531	0	0	0
2013	2,665,958	1,892,444	2,701	0	100,512	129,909	994,599	685,692	126,656	15,005	7,187	0	41	181
2014	1,348,735	920,213	5,365	6,967	194,367	136,783	1,028,925	814,064	42,937	19,199	29,713	2,663	0	0
2015	229,669	219,190	6,201	4,185	389,923	321,930	835,011	514,714	14,950	4,945	15,837	355	0	0
2016	1,618,529	1,136,663	22,637	137	306,235	333,635	918,352	546,950	554,813	111,284	18,559	0	9	1,038
2017	650,916	453,911	48,633	17,408	45,644	300,244	995,706	688,062	20,000	14,829	9,687	3,747	28	0
2018	956,741	1,584,579	49,764	18,149	289,250	322,330	1,012,889	1,019,418	132,390	168,549	19,146	2,166	797	2
2019	623,415	652,727	138,756	14,943	1,046,972	1,588,754	1,478,890	1,340,366	587,683	536,244	109,007	62,881	1,396	2,334
2020	3,616,872	2,478,260	72,308	15,301	861,349	1,060,185	1,286,131	1,267,210	374,892	278,173	151,412	63,467	92	1,367

**Table 1 continued.** Annual landings (AB1) and discards (B2) of Spanish Mackerel by state and year.

Year	NJ		NY		CT		RI		MA		Total	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	0	0	0	0	0	0	0	0	14,985	0	4,174,889	628,537
1982	0	0	0	0	0	0	0	0	0	0	3,035,274	56,916
1983	0	0	0	0	0	0	0	0	0	0	599,605	16,871
1984	0	0	0	0	0	0	0	0	0	0	1,365,710	33,904
1985	0	0	0	0	0	0	0	0	0	0	708,639	104,992
1986	240	0	0	0	0	0	0	0	0	0	1,756,831	499,490
1987	0	0	886	0	0	0	0	0	0	0	1,578,039	53,714
1988	0	0	0	0	0	0	0	0	0	0	2,748,531	131,370
1989	36,164	0	666	0	0	0	2,126	0	0	0	2,612,068	810,209
1990	3,950	0	4,661	460	0	0	61	0	0	0	2,606,484	824,957
1991	12,239	3,637	17,765	0	11,342	0	34	0	24,658	2,407	3,982,483	1,022,351
1992	18,263	0	1,578	0	0	0	0	0	0	992	2,626,446	706,901

Year	NJ		NY		CT		RI		MA		Total	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1993	3,046	1,235	2,781	0	0	0	0	0	817	1,846	1,580,325	595,720
1994	13,185	113,809	0	5,020	0	0	0	0	0	0	1,868,570	1,178,327
1995	0	6,992	0	28,839	0	0	0	0	0	0	1,071,902	742,234
1996	2,300	0	0	0	0	0	0	0	0	0	1,401,999	1,129,534
1997	0	0	0	0	0	0	0	0	0	0	1,765,967	1,096,399
1998	7,960	0	0	0	0	0	0	0	0	0	1,564,970	496,119
1999	4,118	8,238	0	4,190	0	0	545	0	0	0	2,397,837	1,503,926
2000	166	0	6,571	0	0	0	0	0	4,538	1,858	3,120,306	1,846,645
2001	0	10,005	938	3,205	0	0	0	0	4,025	5,438	2,945,311	973,276
2002	0	0	0	0	0	0	0	0	0	0	3,355,493	1,803,037
2003	0	0	0	0	0	0	0	0	9,257	0	3,322,520	2,513,408
2004	1,384	0	0	0	0	0	0	0	2,131	4,974	1,750,477	1,048,189
2005	0	0	0	0	0	0	0	0	0	0	2,346,175	1,540,224
2006	133	0	0	0	0	0	0	0	0	0	1,516,258	647,591
2007	0	0	0	0	0	0	0	0	0	0	2,459,104	1,624,124
2008	269	0	0	0	0	0	0	0	0	0	2,639,732	2,255,087
2009	129	90,879	0	0	0	0	0	0	0	0	3,261,706	1,713,051
2010	0	0	0	0	0	0	0	0	0	0	3,698,223	2,285,504
2011	0	0	0	0	0	0	0	0	0	0	2,757,220	1,471,139
2012	0	0	0	0	0	0	0	0	0	0	2,062,107	1,196,851
2013	0	0	0	0	0	0	0	0	0	0	3,897,653	2,723,232
2014	0	0	0	0	0	0	0	0	455	0	2,650,495	1,899,888
2015	0	0	0	0	0	0	0	0	0	0	1,491,591	1,065,319
2016	0	0	0	0	0	0	0	0	0	1,253	3,439,134	2,130,961
2017	8,107	14,050	0	0	0	0	0	0	0	0	1,778,721	1,492,251
2018	6,753	14,372	0	11,859	0	0	0	0	316	0	2,468,047	3,141,425
2019	8,787	60,003	21,031	49,390	0	4,731	0	0	335	0	4,016,273	4,312,375
2020	3,985	79,458	6,096	5,395	6,254	17,419	3,016	0	0	23,153	6,382,407	5,289,388

**Table 2.** Annual landings (AB1) and discards (B2) of Spanish Mackerel in numbers of fish by mode and year (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	98,136	0	14,985	0			734,578	8,786	3,327,190	619,751	4,174,889	628,537
1982	356,987	0	0	0			748,059	0	1,930,228	56,916	3,035,274	56,916
1983	5,484	17	0	0			159,954	11,419	434,167	5,435	599,605	16,871
1984	33,486	480	0	0			864,466	13,310	467,758	20,114	1,365,710	33,904
1985	67,181	1,659	0	0			493,436	75,523	148,023	27,810	708,639	104,992
1986	59,263	5,991	1,624	0			622,668	51,185	1,073,276	442,314	1,756,831	499,490
1987	273,254	3,754	1,175	0			1,059,875	33,092	243,735	16,868	1,578,039	53,714
1988	220,798	15,586	0	0			1,423,758	38,308	1,103,975	77,476	2,748,531	131,370
1989	218,137	4,768	28,556	0			739,211	222,721	1,626,163	582,719	2,612,068	810,209
1990	387,818	5,431	5,267	68			1,012,181	210,551	1,201,218	608,908	2,606,484	824,957
1991	326,977	17,262	32,288	2,232			1,309,158	446,515	2,314,060	556,342	3,982,483	1,022,351
1992	287,613	20,846	23,916	0			1,178,103	454,360	1,136,814	231,695	2,626,446	706,901
1993	138,868	1,481	45,527	3,515			908,590	258,287	487,340	332,437	1,580,325	595,720
1994	232,334	45,100	40,217	6,701			988,480	469,746	607,538	656,779	1,868,570	1,178,327
1995	160,898	24,792	49,077	0			520,807	305,921	341,120	411,521	1,071,902	742,234
1996	185,315	23,513	0	120			675,097	356,117	541,586	749,784	1,401,999	1,129,534
1997	172,355	25,542	0	0			851,877	225,598	741,736	845,260	1,765,967	1,096,399
1998	109,180	9,259	4,522	0			658,900	235,988	792,368	250,872	1,564,970	496,119
1999	354,135	24,660	609	0			981,066	545,334	1,062,027	933,933	2,397,837	1,503,926
2000	198,556	28,364	6,402	0			1,500,592	1,110,622	1,414,756	707,658	3,120,306	1,846,645
2001	144,969	8,440	14,891	0			1,502,596	608,503	1,282,856	356,332	2,945,311	973,276
2002	269,137	152,099	0	966			1,857,931	1,069,471	1,228,424	580,501	3,355,493	1,803,037
2003	155,413	38,952	3,715	0			1,477,394	963,879	1,685,999	1,510,576	3,322,520	2,513,408
2004	110,130	25,293		0	0		983,018	669,608	657,329	353,288	1,750,477	1,048,189
2005	180,704	14,419		0	0		1,074,476	596,416	1,090,995	929,389	2,346,175	1,540,224
2006	57,750	5,962		23	0		803,452	406,045	655,033	235,584	1,516,258	647,591
2007	36,324	21,169		0	44		1,597,097	842,224	825,683	760,687	2,459,104	1,624,124
2008	342,670	88,073		0	0		1,434,755	1,011,373	862,308	1,155,642	2,639,732	2,255,087
2009	174,979	55,640		5	0		1,649,336	815,453	1,437,386	841,958	3,261,706	1,713,051
2010	121,746	47,245		0	0		1,284,532	824,707	2,291,944	1,413,551	3,698,223	2,285,504

Year	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2011	110,491	6,600			0	0	1,141,189	629,042	1,505,541	835,497	2,757,220	1,471,139
2012	97,342	17,553			0	0	992,863	571,351	971,902	607,947	2,062,107	1,196,851
2013	98,819	41,118			0	0	986,752	437,844	2,812,083	2,244,269	3,897,653	2,723,232
2014	116,638	14,475			0	0	1,529,040	1,069,843	1,004,818	815,570	2,650,495	1,899,888
2015	112,769	20,874			35	35	743,630	552,202	635,157	492,209	1,491,591	1,065,319
2016	153,489	17,414			50	0	916,653	429,517	2,368,942	1,684,030	3,439,134	2,130,961
2017	155,156	18,427			0	0	871,575	527,304	751,990	946,520	1,778,721	1,492,251
2018	152,677	36,919			1,034	64	917,389	1,184,557	1,396,947	1,919,885	2,468,047	3,141,425
2019	202,614	32,273			4,950	0	1,476,998	1,082,114	2,331,711	3,197,987	4,016,273	4,312,375
2020	170,066	53,963			1,700	70	1,552,446	1,097,461	4,658,197	4,137,894	6,382,407	5,289,388

**Table 3.** Spanish Mackerel landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel. MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	98,136	0.78	54 (3)	487 (6)	14,985	1.00	395 (1)	3,760 (1)					734,578	0.45	841 (22)	6,949 (32)	3,327,190	0.58	1,077 (17)	6,335 (43)
1982	356,987	0.98	45 (6)	444 (12)	0	0.00	210 (0)	2,203 (0)					748,059	0.57	1,121 (32)	9,599 (44)	1,930,228	0.91	1,401 (12)	9,802 (21)
1983	5,484	0.53	143 (10)	1,617 (19)	0	0.00	368 (0)	4,395 (0)					159,954	0.48	1,100 (10)	10,271 (15)	434,167	0.51	1,625 (11)	11,512 (20)
1984	33,486	0.33	185 (23)	2,269 (44)	0	0.00	284 (0)	3,422 (0)					864,466	0.61	837 (19)	7,298 (29)	467,758	0.54	1,288 (14)	9,877 (27)
1985	67,181	0.62	140 (12)	1,505 (34)	0	0.00	420 (0)	4,713 (0)					493,436	0.42	1,400 (27)	11,225 (40)	148,023	0.46	1,987 (7)	13,134 (10)
1986	59,263	0.38	220 (42)	2,105 (139)	1,624	0.81	638 (5)	6,191 (7)					622,668	0.30	2,264 (60)	18,258 (103)	1,073,276	0.48	1,054 (8)	6,054 (27)
1987	273,254	0.49	360 (113)	3,450 (220)	1,175	1.00	427 (1)	3,699 (1)					1,059,875	0.22	2,137 (162)	18,785 (355)	243,735	0.43	1,212 (19)	7,543 (35)
1988	220,798	0.21	382 (120)	3,335 (167)	0	0.00	580 (0)	5,424 (0)					1,423,758	0.18	2,525 (175)	20,957 (354)	1,103,975	0.52	1,830 (30)	11,747 (64)
1989	218,137	0.25	412 (105)	4,072 (193)	28,556	0.61	907 (7)	9,015 (8)					739,211	0.21	3,175 (205)	26,346 (415)	1,626,163	0.33	2,273 (57)	15,669 (129)
1990	387,818	0.25	297 (102)	3,289 (199)	5,267	0.47	798 (10)	6,705 (11)					1,012,181	0.13	3,484 (213)	31,280 (499)	1,201,218	0.30	1,871 (38)	13,402 (72)
1991	326,977	0.23	349 (116)	3,793 (209)	32,288	0.41	852 (15)	7,264 (28)					1,309,158	0.17	3,483 (240)	32,082 (520)	2,314,060	0.23	2,407 (115)	19,791 (199)
1992	287,613	0.25	483 (97)	4,671 (125)	23,916	0.69	805 (8)	6,758 (8)					1,178,103	0.16	3,929 (218)	35,810 (449)	1,136,814	0.19	2,347 (82)	19,429 (151)
1993	138,868	0.26	332 (49)	3,871 (71)	45,527	0.82	695 (3)	5,816 (3)					908,590	0.15	3,523 (170)	31,532 (316)	487,340	0.19	2,893 (66)	24,074 (101)
1994	232,334	0.23	427 (92)	5,822 (174)	40,217	0.63	708 (6)	5,635 (7)					988,480	0.19	3,813 (213)	34,366 (377)	607,538	0.24	3,243 (87)	27,602 (131)
1995	160,898	0.27	396 (45)	5,172 (72)	49,077	1.00	653 (1)	5,262 (2)					520,807	0.17	3,490 (145)	31,020 (226)	341,120	0.41	3,150 (52)	27,797 (72)
1996	185,315	0.24	572 (84)	7,783 (156)	0	0.00	693 (0)	5,343 (0)					675,097	0.20	3,462 (153)	32,285 (257)	541,586	0.33	2,643 (52)	24,677 (81)
1997	172,355	0.22	648 (85)	8,024 (185)	0	0.00	821 (0)	6,318 (0)					851,877	0.15	3,752 (183)	35,011 (310)	741,736	0.20	2,940 (69)	24,613 (111)
1998	109,180	0.23	698 (77)	7,827 (163)	4,522	0.71	950 (3)	6,797 (4)					658,900	0.21	3,718 (158)	34,649 (244)	792,368	0.25	2,915 (63)	24,932 (90)

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1999	354,135	0.34	670 ( 91)	5,717 (192)	609	0.71	764 ( 2)	6,162 ( 2)					981,066	0.14	3,551 (186)	35,131 (289)	1,062,027	0.18	3,175 ( 76)	26,329 (145)
2000	198,556	0.32	681 ( 73)	7,071 (138)	6,402	0.85	799 ( 4)	5,739 ( 7)					1,500,592	0.13	3,597 (210)	34,429 (344)	1,414,756	0.23	2,910 ( 72)	23,543 (110)
2001	144,969	0.27	685 ( 66)	7,438 (123)	14,891	0.92	932 ( 2)	7,950 ( 2)					1,502,596	0.16	4,259 (192)	44,355 (363)	1,282,856	0.27	3,258 ( 86)	27,725 (150)
2002	269,137	0.39	741 ( 74)	7,412 (126)	0	0.00	864 ( 0)	6,873 ( 0)					1,857,931	0.19	3,884 (202)	39,503 (335)	1,228,424	0.27	3,363 ( 99)	27,904 (161)
2003	155,413	0.42	654 ( 47)	6,329 ( 71)	3,715	0.68	1,452 ( 4)	12,629 ( 8)					1,477,394	0.19	4,247 (169)	38,004 (321)	1,685,999	0.26	3,643 ( 79)	26,715 (147)
2004	110,130	0.25	1,112 ( 58)	9,068 ( 94)					0	0.00	875 ( 0)	9,336 ( 0)	983,018	0.22	3,172 (140)	30,278 (262)	657,329	0.24	2,251 ( 47)	19,212 ( 72)
2005	180,704	0.51	1,449 ( 47)	11,395 ( 86)					0	0.00	982 ( 0)	10,953 ( 0)	1,074,476	0.22	2,798 (118)	27,192 (233)	1,090,995	0.49	2,077 ( 45)	17,320 ( 90)
2006	57,750	0.47	1,343 ( 36)	9,957 ( 55)					23	1.00	890 ( 1)	8,651 ( 1)	803,452	0.19	3,188 (140)	32,054 (220)	655,033	0.39	1,977 ( 34)	16,495 ( 62)
2007	36,324	0.38	1,322 ( 30)	10,051 ( 52)					0	0.00	642 ( 0)	8,173 ( 0)	1,597,097	0.26	3,411 (172)	32,992 (275)	825,683	0.21	2,165 ( 82)	18,891 (120)
2008	342,670	0.40	1,357 ( 44)	9,920 ( 85)					0	0.00	677 ( 0)	8,775 ( 0)	1,434,755	0.18	3,208 (162)	31,426 (269)	862,308	0.27	2,159 ( 59)	18,842 (114)
2009	174,979	0.33	1,284 ( 49)	8,633 ( 63)					5	1.00	656 ( 1)	7,421 ( 1)	1,649,336	0.14	3,183 (186)	29,517 (318)	1,437,386	0.32	2,060 ( 68)	16,476 (118)
2010	121,746	0.24	1,438 ( 87)	10,422 (158)					0	0.00	676 ( 0)	8,375 ( 0)	1,284,532	0.17	3,615 (259)	33,361 (467)	2,291,944	0.40	2,550 ( 93)	20,723 (197)
2011	110,491	0.42	1,254 ( 75)	8,884 (136)					0	0.00	626 ( 0)	7,611 ( 0)	1,141,189	0.19	3,347 (181)	29,733 (303)	1,505,541	0.33	2,619 ( 70)	19,723 (140)
2012	97,342	0.29	1,140 ( 73)	8,772 (127)					0	0.00	477 ( 0)	5,802 ( 0)	992,863	0.11	3,440 (224)	31,640 (461)	971,902	0.23	2,783 ( 102)	20,810 (171)
2013	98,819	0.42	574 ( 37)	3,314 ( 54)					0	0.00	609 ( 0)	7,729 ( 0)	986,752	0.17	3,361 (125)	27,579 (234)	2,812,083	0.34	2,134 ( 65)	18,214 (151)
2014	116,638	0.18	1,113 ( 95)	7,729 (191)					0	0.00	546 ( 0)	7,301 ( 0)	1,529,040	0.28	3,712 (130)	30,019 (213)	1,004,818	0.18	1,859 ( 84)	16,690 (150)
2015	112,769	0.19	1,134 ( 124)	7,867 (250)					35	1.00	532 ( 1)	7,295 ( 2)	743,630	0.16	3,907 (124)	31,859 (215)	635,157	0.33	1,909 ( 54)	16,441 ( 99)
2016	153,489	0.14	1,284 ( 149)	8,957 (326)					50	1.00	572 ( 1)	8,693 ( 2)	916,653	0.16	3,814 (119)	29,027 (201)	2,368,942	0.40	2,486 ( 51)	16,176 ( 97)
2017	155,156	0.18	1,282 ( 136)	9,359 (275)					0	0.00	507 ( 0)	7,349 ( 0)	871,575	0.20	4,039 (128)	33,713 (236)	751,990	0.26	2,699 ( 40)	17,411 ( 77)
2018	152,677	0.15	1,502 ( 225)	11,969 (471)					1,034	0.83	512 ( 4)	8,141 ( 7)	917,389	0.15	4,007 (177)	34,147 (311)	1,396,947	0.24	2,707 ( 71)	19,198 (139)
2019	202,614	0.12	1,533 ( 231)	11,163 (473)					4,950	0.87	503 ( 10)	8,600 ( 14)	1,476,998	0.14	4,056 (220)	34,530 (419)	2,331,711	0.31	2,740 ( 83)	18,947 (199)

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2020	170,066	0.11	1,821 (299)	13,980 (544)					1,700	0.57	960 (14)	16,261 (21)	1,552,446	0.22	5,098 (222)	44,100 (429)	4,658,197	0.40	3,439 (106)	23,110 (225)

**Table 4.** Spanish Mackerel discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel. MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	0	0.00	54 ( 0 )	487 ( 0 )	0	0.00	395 ( 0 )	3,760 ( 0 )					8,786	0.74	841 ( 2 )	6,949 ( 3 )	619,751	0.84	1,077 ( 3 )	6,335 ( 7 )
1982	0	0.00	45 ( 0 )	444 ( 0 )	0	0.00	210 ( 0 )	2,203 ( 0 )					0	0.00	1,121 ( 0 )	9,599 ( 0 )	56,916	0.61	1,401 ( 4 )	9,802 ( 4 )
1983	17	1.00	143 ( 1 )	1,617 ( 1 )	0	0.00	368 ( 0 )	4,395 ( 0 )					11,419	0.64	1,100 ( 3 )	10,271 ( 3 )	5,435	1.00	1,625 ( 1 )	11,512 ( 1 )
1984	480	1.00	185 ( 1 )	2,269 ( 3 )	0	0.00	284 ( 0 )	3,422 ( 0 )					13,310	1.00	837 ( 1 )	7,298 ( 3 )	20,114	0.63	1,288 ( 3 )	9,877 ( 3 )
1985	1,659	0.69	140 ( 3 )	1,505 ( 7 )	0	0.00	420 ( 0 )	4,713 ( 0 )					75,523	0.57	1,400 ( 4 )	11,225 ( 6 )	27,810	0.87	1,987 ( 3 )	13,134 ( 3 )
1986	5,991	0.55	220 ( 6 )	2,105 ( 20 )	0	1.00	638 ( 1 )	6,191 ( 1 )					51,185	0.56	2,264 ( 10 )	18,258 ( 16 )	442,314	0.94	1,054 ( 3 )	6,054 ( 8 )
1987	3,754	0.61	360 ( 9 )	3,450 ( 25 )	0	0.00	427 ( 0 )	3,699 ( 0 )					33,092	0.34	2,137 ( 19 )	18,785 ( 30 )	16,868	0.73	1,212 ( 3 )	7,543 ( 3 )
1988	15,586	0.67	382 ( 9 )	3,335 ( 30 )	0	0.00	580 ( 0 )	5,424 ( 0 )					38,308	0.36	2,525 ( 24 )	20,957 ( 27 )	77,476	0.79	1,830 ( 3 )	11,747 ( 4 )
1989	4,768	0.43	412 ( 12 )	4,072 ( 22 )	0	0.00	907 ( 0 )	9,015 ( 0 )					222,721	0.73	3,175 ( 51 )	26,346 ( 69 )	582,719	0.64	2,273 ( 16 )	15,669 ( 29 )
1990	5,431	0.46	297 ( 7 )	3,289 ( 24 )	68	1.00	798 ( 1 )	6,705 ( 1 )					210,551	0.33	3,484 ( 61 )	31,280 ( 102 )	608,908	0.72	1,871 ( 11 )	13,402 ( 16 )
1991	17,262	0.37	349 ( 21 )	3,793 ( 51 )	2,232	0.99	852 ( 2 )	7,264 ( 4 )					446,515	0.24	3,483 ( 79 )	32,082 ( 149 )	556,342	0.39	2,407 ( 35 )	19,791 ( 46 )
1992	20,846	0.38	483 ( 16 )	4,671 ( 32 )	0	0.00	805 ( 0 )	6,758 ( 0 )					454,360	0.21	3,929 ( 94 )	35,810 ( 204 )	231,695	0.27	2,347 ( 27 )	19,429 ( 43 )

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1993	1,481	0.50	332 ( 5)	3,871 ( 6)	3,515	1.00	695 ( 1)	5,816 ( 1)					258,287	0.25	3,523 ( 65)	31,532 ( 126)	332,437	0.47	2,893 ( 29)	24,074 ( 39)
1994	45,100	0.23	427 ( 46)	5,822 ( 170)	6,701	0.99	708 ( 3)	5,635 ( 6)					469,746	0.22	3,813 ( 111)	34,366 ( 233)	656,779	0.29	3,243 ( 55)	27,602 ( 101)
1995	24,792	0.51	396 ( 17)	5,172 ( 39)	0	0.00	653 ( 0)	5,262 ( 0)					305,921	0.25	3,490 ( 81)	31,020 ( 148)	411,521	0.39	3,150 ( 38)	27,797 ( 54)
1996	23,513	0.39	572 ( 28)	7,783 ( 61)	120	0.83	693 ( 2)	5,343 ( 3)					356,117	0.23	3,462 ( 86)	32,285 ( 188)	749,784	0.37	2,643 ( 48)	24,677 ( 85)
1997	25,542	0.28	648 ( 29)	8,024 ( 86)	0	0.00	821 ( 0)	6,318 ( 0)					225,598	0.16	3,752 ( 94)	35,011 ( 187)	845,260	0.29	2,940 ( 45)	24,613 ( 76)
1998	9,259	0.45	698 ( 19)	7,827 ( 46)	0	0.00	950 ( 0)	6,797 ( 0)					235,988	0.18	3,718 ( 88)	34,649 ( 151)	250,872	0.24	2,915 ( 37)	24,932 ( 42)
1999	24,660	0.36	670 ( 30)	5,717 ( 86)	0	0.00	764 ( 0)	6,162 ( 0)					545,334	0.17	3,551 ( 121)	35,131 ( 229)	933,933	0.23	3,175 ( 68)	26,329 ( 99)
2000	28,364	0.46	681 ( 19)	7,071 ( 45)	0	0.00	799 ( 0)	5,739 ( 0)					1,110,622	0.21	3,597 ( 155)	34,429 ( 308)	707,658	0.28	2,910 ( 43)	23,543 ( 63)
2001	8,440	0.41	685 ( 12)	7,438 ( 18)	0	0.00	932 ( 0)	7,950 ( 0)					608,503	0.29	4,259 ( 114)	44,355 ( 200)	356,332	0.38	3,258 ( 36)	27,725 ( 49)
2002	152,099	0.66	741 ( 27)	7,412 ( 55)	966	1.00	864 ( 2)	6,873 ( 2)					1,069,471	0.25	3,884 ( 141)	39,503 ( 279)	580,501	0.29	3,363 ( 57)	27,904 ( 84)
2003	38,952	0.55	654 ( 16)	6,329 ( 29)	0	0.00	1,452 ( 0)	12,629 ( 0)					963,879	0.20	4,247 ( 123)	38,004 ( 285)	1,510,576	0.55	3,643 ( 32)	26,715 ( 57)
2004	25,293	0.46	1,112 ( 13)	9,068 ( 35)					0	0.00	875 ( 0)	9,336 ( 0)	669,608	0.23	3,172 ( 90)	30,278 ( 178)	353,288	0.33	2,251 ( 27)	19,212 ( 37)
2005	14,419	0.44	1,449 ( 21)	11,395 ( 54)					0	0.00	982 ( 0)	10,953 ( 0)	596,416	0.21	2,798 ( 85)	27,192 ( 172)	929,389	0.34	2,077 ( 30)	17,320 ( 63)
2006	5,962	0.43	1,343 ( 15)	9,957 ( 22)					0	0.00	890 ( 0)	8,651 ( 0)	406,045	0.20	3,188 ( 95)	32,054 ( 163)	235,584	0.29	1,977 ( 23)	16,495 ( 25)
2007	21,169	0.57	1,322 ( 13)	10,051 ( 31)					44	1.00	642 ( 1)	8,173 ( 1)	842,224	0.22	3,411 ( 110)	32,992 ( 215)	760,687	0.62	2,165 ( 39)	18,891 ( 49)
2008	88,073	0.62	1,357 ( 27)	9,920 ( 69)					0	0.00	677 ( 0)	8,775 ( 0)	1,011,373	0.16	3,208 ( 140)	31,426 ( 315)	1,155,642	0.43	2,159 ( 56)	18,842 ( 123)
2009	55,640	0.68	1,284 ( 16)	8,633 ( 35)					0	0.00	656 ( 0)	7,421 ( 0)	815,453	0.19	3,183 ( 106)	29,517 ( 216)	841,958	0.27	2,060 ( 40)	16,476 ( 66)
2010	47,245	0.78	1,438 ( 19)	10,422 ( 30)					0	0.00	676 ( 0)	8,375 ( 0)	824,707	0.20	3,615 ( 170)	33,361 ( 314)	1,413,551	0.32	2,550 ( 61)	20,723 ( 117)
2011	6,600	0.30	1,254 ( 23)	8,884 ( 54)					0	0.00	626 ( 0)	7,611 ( 0)	629,042	0.19	3,347 ( 133)	29,733 ( 234)	835,497	0.24	2,619 ( 55)	19,723 ( 91)
2012	17,553	0.40	1,140 ( 21)	8,772 ( 59)					0	0.00	477 ( 0)	5,802 ( 0)	571,351	0.18	3,440 ( 137)	31,640 ( 282)	607,947	0.26	2,783 ( 63)	20,810 ( 114)
2013	41,118	0.81	574 ( 13)	3,314 ( 41)					0	0.00	609 ( 0)	7,729 ( 0)	437,844	0.33	3,361 ( 85)	27,579 ( 161)	2,244,269	0.37	2,134 ( 56)	18,214 ( 121)

Year	Cbt				CbtHbt				Hbt				Priv				Shore			
	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
2014	14,475	0.31	1,113 ( 29)	7,729 ( 82)					0	0.00	546 ( 0)	7,301 ( 0)	1,069,843	0.35	3,712 ( 85)	30,019 (155)	815,570	0.22	1,859 ( 64)	16,690 (122)
2015	20,874	0.33	1,134 ( 49)	7,867 (167)					35	1.00	532 ( 1)	7,295 ( 1)	552,202	0.20	3,907 (105)	31,859 (197)	492,209	0.26	1,909 ( 47)	16,441 ( 75)
2016	17,414	0.25	1,284 ( 58)	8,957 (124)					0	0.00	572 ( 0)	8,693 ( 0)	429,517	0.21	3,814 ( 75)	29,027 (155)	1,684,030	0.43	2,486 ( 44)	16,176 ( 80)
2017	18,427	0.29	1,282 ( 54)	9,359 (141)					0	0.00	507 ( 0)	7,349 ( 0)	527,304	0.29	4,039 ( 87)	33,713 (168)	946,520	0.24	2,699 ( 48)	17,411 ( 64)
2018	36,919	0.28	1,502 ( 94)	11,969 (313)					64	0.75	512 ( 2)	8,141 ( 2)	1,184,557	0.58	4,007 (130)	34,147 (281)	1,919,885	0.30	2,707 ( 67)	19,198 (140)
2019	32,273	0.26	1,533 ( 87)	11,163 (288)					0	0.00	503 ( 0)	8,600 ( 0)	1,082,114	0.15	4,056 (182)	34,530 (415)	3,197,987	0.26	2,740 ( 96)	18,947 (225)
2020	53,963	0.29	1,821 (124)	13,980 (340)					70	0.74	960 ( 2)	16,261 ( 2)	1,097,461	0.22	5,098 (178)	44,100 (419)	4,137,894	0.29	3,439 (105)	23,110 (232)

**Table 5.** Total Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, with associated coefficients of variation (CV; Dettloff et al. 2020) by year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Spanish Mackerel.

Year	AB1				B2			
	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	4,174,889	0.46	2,367 ( 43)	17,531 ( 82)	628,537	0.83	2,367 ( 5)	17,531 ( 10)
1982	3,035,274	0.61	2,777 ( 50)	22,046 ( 77)	56,916	0.61	2,777 ( 4)	22,046 ( 4)
1983	599,605	0.38	3,236 ( 31)	27,795 ( 54)	16,871	0.53	3,236 ( 5)	27,795 ( 5)
1984	1,365,710	0.43	2,594 ( 56)	22,866 ( 100)	33,904	0.54	2,594 ( 5)	22,866 ( 9)
1985	708,639	0.30	3,947 ( 46)	30,577 ( 84)	104,992	0.47	3,947 ( 10)	30,577 ( 16)
1986	1,756,831	0.30	4,176 (115)	32,608 ( 276)	499,490	0.84	4,176 ( 20)	32,608 ( 45)
1987	1,578,039	0.18	4,136 (295)	33,477 ( 611)	53,714	0.32	4,136 ( 31)	33,477 ( 58)
1988	2,748,531	0.23	5,317 (325)	41,463 ( 585)	131,370	0.49	5,317 ( 36)	41,463 ( 61)
1989	2,612,068	0.21	6,767 (374)	55,102 ( 745)	810,209	0.44	6,767 ( 79)	55,102 (120)
1990	2,606,484	0.15	6,450 (363)	54,676 ( 781)	824,957	0.54	6,450 ( 80)	54,676 (143)
1991	3,982,483	0.14	7,091 (486)	62,930 ( 956)	1,022,351	0.23	7,091 (137)	62,930 (250)
1992	2,626,446	0.11	7,564 (405)	66,668 ( 733)	706,901	0.16	7,564 (137)	66,668 (279)
1993	1,580,325	0.10	7,443 (288)	65,293 ( 491)	595,720	0.28	7,443 (100)	65,293 (172)
1994	1,868,570	0.13	8,191 (398)	73,425 ( 689)	1,178,327	0.18	8,191 (215)	73,425 (510)
1995	1,071,902	0.16	7,689 (243)	69,251 ( 372)	742,234	0.24	7,689 (136)	69,251 (241)
1996	1,401,999	0.16	7,370 (289)	70,088 ( 494)	1,129,534	0.25	7,370 (164)	70,088 (337)
1997	1,765,967	0.11	8,161 (337)	73,966 ( 606)	1,096,399	0.22	8,161 (168)	73,966 (349)
1998	1,564,970	0.15	8,281 (301)	74,205 ( 501)	496,119	0.14	8,281 (144)	74,205 (239)
1999	2,397,837	0.11	8,160 (355)	73,339 ( 628)	1,503,926	0.16	8,160 (219)	73,339 (414)
2000	3,120,306	0.12	7,987 (359)	70,782 ( 599)	1,846,645	0.16	7,987 (217)	70,782 (416)
2001	2,945,311	0.14	9,134 (346)	87,468 ( 638)	973,276	0.23	9,134 (162)	87,468 (267)
2002	3,355,493	0.14	8,852 (375)	81,692 ( 622)	1,803,037	0.18	8,852 (227)	81,692 (420)
2003	3,322,520	0.15	9,996 (299)	83,677 ( 547)	2,513,408	0.34	9,996 (171)	83,677 (371)
2004	1,750,477	0.15	7,410 (245)	67,852 ( 428)	1,048,189	0.18	7,410 (130)	67,852 (250)
2005	2,346,175	0.25	7,306 (210)	66,818 ( 409)	1,540,224	0.21	7,306 (136)	66,818 (289)
2006	1,516,258	0.20	7,398 (211)	67,039 ( 338)	647,591	0.16	7,398 (133)	67,039 (210)
2007	2,459,104	0.18	7,540 (284)	69,969 ( 447)	1,624,124	0.31	7,540 (163)	69,969 (296)
2008	2,639,732	0.14	7,401 (265)	68,800 ( 468)	2,255,087	0.23	7,401 (223)	68,800 (507)
2009	3,261,706	0.15	7,183 (304)	61,896 ( 500)	1,713,051	0.16	7,183 (162)	61,896 (317)
2010	3,698,223	0.25	8,279 (439)	72,744 ( 822)	2,285,504	0.21	8,279 (250)	72,744 (461)
2011	2,757,220	0.20	7,846 (326)	65,853 ( 579)	1,471,139	0.15	7,846 (211)	65,853 (379)
2012	2,062,107	0.12	7,840 (399)	66,920 ( 759)	1,196,851	0.16	7,840 (221)	66,920 (455)
2013	3,897,653	0.25	6,678 (227)	56,836 ( 439)	2,723,232	0.31	6,678 (154)	56,836 (323)
2014	2,650,495	0.17	7,230 (309)	61,739 ( 554)	1,899,888	0.22	7,230 (178)	61,739 (359)
2015	1,491,591	0.16	7,482 (303)	63,462 ( 566)	1,065,319	0.15	7,482 (202)	63,462 (440)
2016	3,439,134	0.27	8,156 (320)	62,766 ( 626)	2,130,961	0.34	8,156 (177)	62,766 (359)
2017	1,778,721	0.14	8,527 (304)	67,764 ( 588)	1,492,251	0.18	8,527 (189)	67,764 (373)
2018	2,468,047	0.14	8,728 (477)	73,377 ( 928)	3,141,425	0.28	8,728 (293)	73,377 (736)
2019	4,016,273	0.19	8,832 (544)	73,177 (1,105)	4,312,375	0.19	8,832 (365)	73,177 (928)
2020	6,382,407	0.30	11,318 (641)	97,399 (1,219)	5,289,388	0.23	11,318 (409)	97,399 (993)

**Table 6.** Estimated landings of Spanish Mackerel in pounds whole weight by state and year (MRIP). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).

Year	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	RI	MA	Total
1981	6,194,899	8,590	113,455	969,802	0	0	0	0	0	0	0	54,371	7,341,118
1982	2,019,584	661	30,456	1,502,418	0	0	0	0	0	0	0	0	3,553,120
1983	909,566	8,491	4,137	17,331	0	0	0	0	0	0	0	0	939,525
1984	1,444,390	4,755	173,233	773,132	0	0	0	0	0	0	0	0	2,395,509
1985	348,595	17,088	41,290	757,536	0	0	0	0	0	0	0	0	1,164,509
1986	751,790	58,672	445,527	1,177,151	3,966	181	0	528	0	0	0	0	2,437,815
1987	737,685	51,580	166,374	1,568,595	1,626	38,367	0	0	1,170	0	0	0	2,565,396
1988	3,169,959	8,117	91,306	2,437,081	288,648	0	0	0	0	0	0	0	5,995,110
1989	889,854	8,189	327,094	1,695,807	49,551	0	0	52,270	846	0	7,713	0	3,031,324
1990	1,915,657	56,837	811,646	1,743,374	78,459	1,656	1,205	6,041	7,128	0	223	0	4,622,225
1991	3,541,987	8,075	729,423	1,951,608	77,181	24,905	2,417	17,738	51,621	46,626	139	101,584	6,553,304
1992	2,519,170	85,473	138,301	1,470,067	173,858	22,883	88	28,824	2,491	0	0	0	4,441,154
1993	790,875	38,324	126,776	1,139,014	169,287	101,451	0	4,957	4,525	0	0	2,964	2,378,173
1994	1,054,272	80,269	228,910	714,983	320,742	24,562	0	19,396	0	0	0	0	2,443,134
1995	555,320	14,546	22,215	510,969	50,238	86,661	0	0	0	0	0	0	1,239,948
1996	715,575	54,791	200,458	711,851	143,769	0	0	3,229	0	0	0	0	1,829,673
1997	1,003,774	176,410	201,660	1,386,533	205,489	0	0	0	0	0	0	0	2,973,866
1998	1,617,466	135,150	254,386	467,520	67,233	9,287	641	16,945	0	0	0	0	2,568,628
1999	2,113,773	44,745	169,854	890,934	169,248	1,974	379	5,031	0	0	1,977	0	3,397,915
2000	3,001,070	91,838	116,394	1,199,962	128,554	38,477	0	260	10,258	0	0	16,468	4,603,280
2001	2,939,455	68,931	120,468	1,164,598	47,764	25,312	0	0	1,504	0	0	14,604	4,382,635
2002	3,943,757	6,106	119,565	1,024,679	7,021	0	0	0	0	0	0	0	5,101,128
2003	3,051,866	68,022	48,733	704,118	43,559	30,307	0	0	0	0	0	33,587	3,980,191
2004	2,013,244	10,429	137,858	817,443	73,962	10,965	0	2,218	0	0	0	7,734	3,073,851
2005	2,770,498	14,792	154,975	483,451	39,181	33,668	0	0	0	0	0	0	3,496,566
2006	1,808,948	5,930	89,826	632,072	53	13,210	0	309	0	0	0	0	2,550,349
2007	2,816,122	62,024	265,398	828,869	93	32,342	0	0	0	0	0	0	4,004,848
2008	2,122,110	47,270	110,556	1,216,505	215,651	16,360	0	384	0	0	0	0	3,728,836
2009	2,712,260	16,321	138,170	2,048,326	58,451	82,497	0	225	0	0	0	0	5,056,249

<b>Year</b>	<b>FLE</b>	<b>GA</b>	<b>SC</b>	<b>NC</b>	<b>VA</b>	<b>MD</b>	<b>DE</b>	<b>NJ</b>	<b>NY</b>	<b>CT</b>	<b>RI</b>	<b>MA</b>	<b>Total</b>
2010	4,601,884	28,547	221,028	1,135,935	64,053	21,067	0	0	0	0	0	0	6,072,513
2011	2,800,715	19,667	312,733	1,116,415	99,033	47,576	0	0	0	0	0	0	4,396,140
2012	1,194,667	4,490	237,109	1,343,803	21,423	22,935	0	0	0	0	0	0	2,824,428
2013	2,952,585	3,435	127,820	1,197,810	132,681	10,239	58	0	0	0	0	0	4,424,627
2014	2,018,354	5,734	219,970	1,190,918	46,672	39,522	0	0	0	0	0	1,649	3,522,818
2015	349,714	7,082	254,664	991,101	13,232	15,845	0	0	0	0	0	0	1,631,639
2016	2,486,415	22,502	195,902	891,827	613,524	28,749	8	0	0	0	0	0	4,238,927
2017	1,244,054	73,370	70,615	1,133,231	32,200	13,458	39	11,262	0	0	0	0	2,578,230
2018	1,175,590	79,389	485,877	1,181,582	206,941	41,370	1,332	8,671	0	0	0	1,148	3,181,902
2019	1,034,546	405,107	792,032	1,618,094	708,567	176,216	1,617	10,177	24,358	0	0	1,216	4,771,930
2020	4,280,957	277,427	567,431	1,771,846	441,091	237,757	96	4,652	7,116	22,692	10,944	0	7,622,008

**Table 7.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by state and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths.

Year	FLE					GA					SC					NC					VA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	191	53	340	425	660	3	3	380	402	415	25	6	360	417	630	82	16	225	418	685	0	0	0	0	0
1982	108	37	300	421	670	1	1	520	520	520	34	6	300	422	510	94	27	202	419	810	0	0	0	0	0
1983	72	34	335	446	670	10	6	335	444	560	21	7	300	378	510	4	2	430	482	510	0	0	0	0	0
1984	108	54	285	430	630	16	6	320	405	550	103	28	290	394	640	40	11	330	392	605	0	0	0	0	0
1985	30	14	290	414	559	32	11	304	393	538	55	24	290	383	600	119	33	250	454	695	0	0	0	0	0
1986	110	35	311	398	696	87	23	338	459	700	465	155	290	451	800	168	54	205	414	690	12	7	240	388	559
1987	72	31	350	464	670	128	40	290	437	672	256	118	281	446	735	1,689	417	230	420	865	2	2	396	400	404
1988	130	67	279	503	800	17	13	330	396	505	276	83	302	433	670	2,136	414	200	418	835	36	8	350	431	500
1989	126	55	307	395	687	19	8	300	348	415	381	114	290	406	695	2,783	530	200	385	850	102	24	256	363	475
1990	130	66	297	417	713	39	16	312	397	630	209	43	254	426	885	3,282	619	210	392	901	74	23	211	381	561
1991	290	119	290	420	889	9	9	328	430	540	146	38	260	487	774	3,382	699	160	395	823	73	19	232	377	425
1992	389	130	291	434	660	75	30	270	454	733	147	47	260	467	760	2,134	486	190	392	841	103	24	300	379	482
1993	263	115	307	433	687	16	5	350	482	630	90	27	300	452	720	1,464	312	228	392	725	57	20	277	379	646
1994	265	100	267	394	733	19	7	400	599	742	141	53	302	424	598	2,947	465	162	378	746	217	59	270	380	510
1995	216	83	288	396	642	20	3	319	368	599	39	10	318	428	715	1,263	262	208	374	809	41	11	304	366	471
1996	204	70	259	439	751	47	15	310	408	710	190	66	250	393	640	1,697	331	250	388	1,782	31	11	346	408	526
1997	257	91	170	426	710	41	15	335	544	710	141	47	227	398	751	2,572	443	225	405	845	29	10	347	496	640
1998	326	125	285	448	754	41	16	311	436	620	140	41	299	408	720	1,331	291	233	386	790	47	19	224	418	566
1999	714	244	279	445	725	40	11	330	522	940	76	20	305	386	674	1,952	331	216	368	735	72	16	317	380	520
2000	664	213	245	436	754	53	20	148	473	940	68	32	310	398	666	1,880	308	228	370	691	40	15	314	398	509
2001	967	256	302	441	809	35	11	264	445	650	32	10	320	374	538	1,539	343	290	383	730	28	12	300	400	452
2002	980	300	293	427	704	12	8	361	498	641	25	12	280	405	625	1,362	297	241	374	712	26	5	321	369	415
2003	923	314	283	409	727	145	17	319	426	729	9	6	280	371	550	822	186	275	382	710	20	13	335	379	448
2004	689	197	277	446	748	49	16	312	393	620	162	48	305	425	791	556	157	281	417	699	19	6	335	410	471
2005	567	187	316	433	728	100	7	329	386	524	119	45	295	427	690	574	148	303	364	742	11	3	347	403	485
2006	494	162	298	451	785	14	6	315	398	484	59	17	310	410	724	524	144	282	417	1,001	1	1	401	401	401
2007	477	197	283	450	654	69	13	315	423	660	84	33	310	392	600	642	192	268	393	726	9	6	411	426	441
2008	482	161	291	436	678	25	12	327	444	644	105	34	235	401	637	1,104	224	227	372	666	172	31	330	409	586
2009	394	159	301	450	695	55	13	304	426	629	75	25	290	395	780	1,239	277	289	387	683	21	10	317	419	582
2010	672	235	311	466	698	33	9	318	451	603	99	54	304	434	662	1,529	491	272	385	672	60	21	289	394	548
2011	368	131	302	471	667	43	10	294	412	548	110	38	226	357	791	1,324	375	282	374	713	98	14	335	405	481
2012	360	107	312	434	670	69	12	330	424	618	75	31	267	403	622	2,113	588	268	381	712	59	19	258	421	509

Year	FLE					GA					SC					NC					VA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2013	357	132	270	395	615	12	3	372	441	589	11	9	319	385	521	1,088	277	257	382	688	40	14	258	378	502
2014	388	121	296	415	655	116	8	305	377	500	112	48	260	398	639	1,522	359	228	365	760	43	11	300	382	455
2015	202	60	312	426	630	7	2	466	582	687	225	64	260	354	589	1,682	420	234	368	696	103	18	288	354	524
2016	222	75	300	441	656	8	4	325	410	611	171	72	260	341	585	2,026	423	280	356	669	362	42	284	347	586
2017	157	76	300	446	690	98	21	308	414	638	72	23	298	412	642	2,063	431	261	372	670	79	20	312	389	548
2018	197	73	319	458	675	194	41	230	469	680	179	40	295	387	570	3,182	612	251	382	690	358	68	290	391	625
2019	165	51	300	469	638	125	35	320	462	666	353	95	291	378	669	2,828	561	235	374	715	1,000	139	243	368	734
2020	283	89	288	419	697	155	37	320	513	700	313	69	270	351	598	3,859	631	228	382	698	846	138	243	374	734

**Table 7 continued.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by state and year.

Year	MD					DE					NJ					NY					CT				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	2	1	440	440	440	0	0	0	0	0	1	1	480	480	480	0	0	0	0	0	0	0	0	0	0
1987	5	2	321	425	480	0	0	0	0	0	0	0	0	0	0	1	1	559	559	559	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	29	10	247	372	512	3	3	442	559	624	0	0	0	0	0
1990	5	2	371	398	439	3	1	372	391	414	3	3	397	421	446	6	6	320	463	656	0	0	0	0	0
1991	48	16	289	393	446	15	10	347	411	472	26	10	354	403	598	22	18	324	486	756	5	4	498	561	671
1992	22	4	355	411	632	2	2	347	384	422	12	7	339	494	754	5	3	420	536	691	0	0	0	0	0
1993	18	5	379	412	512	0	0	0	0	0	3	2	339	513	754	5	4	470	513	578	0	0	0	0	0

Year	MD					DE					NJ					NY					CT					
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	
1994	15	3	305	379	444	0	0	0	0	0	5	1	419	447	471	0	0	0	0	0	0	0	0	0	0	
1995	16	3	377	401	425	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1996	0	0	0	0	0	0	0	0	0	0	1	1	518	518	518	0	0	0	0	0	0	0	0	0	0	
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1998	10	6	302	408	493	1	1	419	419	419	3	2	462	474	485	0	0	0	0	0	0	0	0	0	0	
1999	3	3	410	418	433	1	1	319	319	319	1	1	420	420	420	0	0	0	0	0	0	0	0	0	0	
2000	20	7	366	413	458	0	0	0	0	0	1	1	458	458	458	2	2	478	482	485	0	0	0	0	0	0
2001	10	3	403	427	458	0	0	0	0	0	0	0	0	0	0	1	1	500	500	500	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2003	30	10	402	437	474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2004	12	2	374	445	532	0	0	0	0	0	1	1	472	472	472	0	0	0	0	0	0	0	0	0	0	
2005	98	19	386	447	702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2006	14	7	425	473	557	0	0	0	0	0	2	1	432	455	478	0	0	0	0	0	0	0	0	0	0	
2007	26	6	398	454	553	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2008	13	4	391	436	499	0	0	0	0	0	2	2	380	416	453	0	0	0	0	0	0	0	0	0	0	
2009	27	14	399	445	560	0	0	0	0	0	2	2	401	412	423	0	0	0	0	0	0	0	0	0	0	
2010	20	12	403	452	467	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2011	19	11	399	455	502	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2012	7	2	427	463	535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2013	4	2	450	501	535	3	2	394	425	443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2014	11	6	402	457	483	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2015	8	2	382	458	551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2016	28	9	350	405	507	1	1	351	351	351	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2017	14	7	367	450	576	5	3	351	404	514	8	7	315	365	425	0	0	0	0	0	0	0	0	0		
2018	63	17	259	457	606	19	5	381	473	610	18	5	299	372	500	0	0	0	0	0	0	0	0	0		
2019	267	59	310	416	636	13	8	235	363	560	12	11	348	498	862	3	3	390	425	448	0	0	0	0	0	
2020	226	45	259	417	606	15	6	330	379	410	9	4	336	409	531	7	6	330	410	618	3	3	394	421	450	

**Table 7 continued.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by state and year.

Year	RI					MA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	1	1	680	680	680
2019	0	0	0	0	0	2	2	457	457	457
2020	2	2	420	438	457	0	0	0	0	0

**Table 8.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by state and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish weights.

Year	FLE					GA					SC					NC					VA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	191	53	0.7	1.7	5.3	3	3	1.2	1.3	1.4	23	6	0.9	1.4	3.3	82	16	0.3	1.8	5.0	0	0	0.0	0.0	0.0
1982	108	37	0.4	1.6	6.9	1	1	3.2	3.2	3.2	22	6	0.7	1.8	3.9	94	27	0.2	1.8	8.4	0	0	0.0	0.0	0.0
1983	72	34	0.9	1.8	5.7	10	6	0.7	1.9	4.6	21	7	0.2	1.2	3.2	4	2	1.4	2.2	2.7	0	0	0.0	0.0	0.0
1984	108	54	0.7	1.7	4.6	16	6	0.7	1.3	2.2	103	28	0.4	1.5	5.2	40	11	0.7	1.4	3.7	0	0	0.0	0.0	0.0
1985	30	14	0.7	1.6	2.9	32	11	0.4	1.3	2.9	55	24	0.7	1.3	4.1	119	33	0.2	1.8	7.5	0	0	0.0	0.0	0.0
1986	110	35	0.7	1.3	6.4	87	23	0.7	2.1	6.6	465	155	0.4	2.1	10.1	168	54	0.2	1.6	7.4	12	7	0.4	1.9	5.2
1987	72	31	1.1	2.0	5.3	128	40	0.7	2.2	6.0	256	118	0.4	2.1	6.9	1,689	417	0.2	1.8	8.9	2	2	1.3	1.3	1.3
1988	37	67	0.7	2.4	5.3	13	13	0.7	1.2	2.6	159	83	0.5	1.5	5.3	604	414	0.2	1.5	6.7	36	8	1.3	2.2	3.2
1989	126	55	0.7	1.4	6.3	19	8	0.7	0.8	1.1	381	114	0.4	1.8	9.1	2,783	530	0.2	1.4	11.1	102	24	0.4	1.2	2.5
1990	130	66	0.4	1.7	7.1	33	16	0.7	1.3	4.4	208	43	0.4	2.1	13.3	3,282	619	0.2	1.4	12.4	74	23	0.3	1.4	3.9
1991	290	119	0.4	1.7	11.7	7	9	0.9	1.4	2.0	127	38	0.4	4.0	10.7	3,382	699	0.2	1.6	11.1	73	19	0.4	1.4	2.5
1992	374	130	0.2	1.7	5.4	75	30	0.2	2.2	7.7	147	47	0.4	2.4	7.1	2,134	486	0.2	1.4	9.2	102	24	0.7	1.1	3.9
1993	263	115	0.4	1.7	6.6	16	5	0.9	2.4	4.4	90	27	0.7	1.7	7.0	1,464	312	0.2	1.4	8.0	57	20	0.6	1.3	5.7
1994	265	100	0.4	1.4	7.1	19	7	1.3	4.4	7.5	141	53	0.6	1.5	4.0	2,947	465	0.1	1.1	8.3	217	59	0.5	1.5	3.3
1995	216	83	0.3	1.4	6.7	20	3	0.7	1.0	4.0	39	10	0.6	1.3	7.7	1,263	262	0.2	1.2	10.3	41	11	0.6	1.1	2.1
1996	204	70	0.2	2.0	8.2	47	15	0.3	1.5	6.2	190	66	0.3	1.2	3.5	1,696	331	0.2	1.2	10.5	31	11	0.8	1.4	3.2
1997	257	91	0.1	1.6	5.3	41	15	0.7	3.3	6.2	141	47	0.4	1.6	9.9	2,572	443	0.3	1.4	9.6	29	10	1.0	2.5	4.8
1998	326	125	0.4	2.1	9.5	41	16	0.6	1.8	5.1	140	41	0.4	1.5	6.0	1,331	291	0.2	1.3	7.9	47	19	0.2	2.1	4.8
1999	714	244	0.4	2.0	10.8	40	11	0.7	3.2	11.7	76	20	0.4	1.5	5.5	1,952	331	0.2	1.1	8.2	72	16	0.6	1.2	3.1
2000	664	213	0.3	1.8	7.2	53	20	0.1	3.1	11.7	68	32	0.4	1.6	5.6	1,880	308	0.2	1.0	7.6	40	15	0.8	1.5	2.8
2001	967	256	0.6	1.7	10.9	35	11	0.3	1.7	4.2	32	10	0.4	1.1	3.2	1,539	343	0.2	1.2	7.3	28	12	0.7	1.4	2.0
2002	980	300	0.4	1.6	6.7	12	8	0.9	2.4	4.2	25	12	0.6	1.8	7.7	1,362	297	0.2	1.1	5.9	26	5	0.7	1.1	1.6
2003	923	314	0.4	1.4	7.1	145	17	0.6	2.9	12.2	9	6	0.8	1.3	2.9	822	186	0.3	1.2	8.3	20	13	0.9	1.2	1.8
2004	689	197	0.4	2.0	8.0	49	16	0.6	1.2	4.4	162	48	0.6	1.7	8.1	556	157	0.3	1.4	6.8	19	6	0.8	1.3	1.9
2005	567	187	0.6	1.7	7.2	100	7	0.6	1.1	2.8	119	45	0.6	1.7	5.3	574	148	0.2	0.9	6.4	11	3	0.9	1.4	2.5
2006	494	162	0.5	1.9	8.6	14	6	0.6	1.1	1.9	43	17	0.6	1.6	5.6	524	144	0.4	1.6	12.7	1	1	1.2	1.2	1.2
2007	477	197	0.4	1.8	4.9	69	13	0.6	1.5	5.5	84	33	0.4	1.3	3.3	642	192	0.4	1.3	6.5	9	6	1.4	1.5	1.5
2008	482	161	0.4	1.8	5.7	25	12	0.7	1.8	5.1	105	34	0.4	1.4	5.0	1,104	224	0.3	1.1	7.2	172	31	0.9	1.4	3.4
2009	394	159	0.5	1.9	6.0	55	13	0.4	1.6	4.4	75	25	0.3	1.4	8.8	1,239	277	0.3	1.3	6.0	21	10	0.7	1.6	3.6
2010	672	235	0.5	1.9	5.5	33	9	0.7	2.0	5.0	99	54	0.6	1.8	5.5	1,529	491	0.3	1.2	6.6	60	21	0.7	1.3	2.2
2011	368	131	0.5	2.2	5.7	43	10	0.6	1.5	3.4	110	38	0.4	1.0	9.2	1,324	375	0.2	1.1	6.0	98	14	0.8	1.4	2.3
2012	360	107	0.4	1.6	5.4	69	12	0.8	1.6	4.9	75	31	0.4	1.3	3.1	2,113	588	0.3	1.3	6.6	59	19	0.4	1.5	2.3

Year	FLE					GA					SC					NC					VA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2013	354	132	0.4	1.3	5.3	12	3	1.1	1.8	4.0	11	9	0.6	1.3	3.1	1,088	277	0.4	1.3	7.5	40	14	0.4	1.2	2.3
2014	388	121	0.5	1.5	4.9	116	8	0.4	1.1	2.1	112	48	0.3	1.3	4.4	1,522	359	0.3	1.0	7.5	43	11	0.6	1.1	1.7
2015	202	60	0.6	1.6	5.3	7	2	1.4	3.6	5.6	225	64	0.3	0.9	3.9	1,682	420	0.4	1.1	7.3	103	18	0.5	0.9	2.8
2016	222	75	0.5	1.8	5.6	8	4	0.6	1.5	3.9	171	72	0.3	0.8	4.4	2,026	423	0.4	0.9	5.8	362	42	0.4	0.8	3.3
2017	157	76	0.5	1.8	6.3	98	21	0.6	1.5	5.7	72	23	0.6	1.6	5.5	2,063	431	0.4	1.1	5.7	79	20	0.6	1.3	3.6
2018	197	73	0.6	2.1	6.9	194	41	0.3	2.3	5.5	179	40	0.6	1.2	3.0	3,182	612	0.3	1.1	6.2	358	68	0.6	1.3	5.1
2019	165	51	0.4	2.0	5.5	125	35	0.6	2.1	5.5	353	95	0.4	1.1	5.5	2,828	561	0.3	1.1	7.1	1,000	139	0.3	1.0	4.9
2020	283	89	0.5	1.5	6.5	155	37	0.4	2.9	6.0	313	69	0.4	0.9	4.6	3,859	631	0.3	1.2	8.2	846	138	0.4	1.1	4.9

**Table 8 continued.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by state and year.

Year	MD					DE					NJ					NY					CT				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1982	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1983	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1984	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1985	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1986	2	1	3.9	3.9	3.9	0	0	0.0	0.0	0.0	1	1	2.2	2.2	2.2	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1987	5	2	0.9	2.0	2.9	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	1	1	4.7	4.7	4.7	0	0	0.0	0.0	0.0
1988	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1989	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	29	10	0.4	1.4	3.4	3	3	1.8	3.6	4.6	0	0	0.0	0.0	0.0
1990	5	2	1.4	2.0	3.1	3	1	1.2	1.6	1.9	3	3	1.3	1.6	2.0	6	6	1.1	2.4	5.1	0	0	0.0	0.0	0.0
1991	48	16	0.7	1.4	2.0	15	10	1.0	1.8	2.8	26	10	1.1	1.4	4.2	22	18	0.7	2.8	7.0	5	4	2.9	4.2	6.8
1992	22	4	1.5	2.3	6.5	2	2	1.3	2.0	2.7	12	7	1.1	3.1	7.2	5	3	1.9	3.5	6.0	0	0	0.0	0.0	0.0
1993	18	5	1.1	2.0	2.9	0	0	0.0	0.0	0.0	3	2	1.1	3.5	7.1	5	4	2.7	3.1	3.8	0	0	0.0	0.0	0.0

Year	MD					DE					NJ					NY					CT				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1994	15	3	0.9	1.3	1.8	0	0	0.0	0.0	0.0	5	1	1.4	1.7	2.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1995	16	3	1.5	1.7	2.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1996	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	1	1	2.7	2.7	2.7	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1997	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1998	10	6	0.8	2.1	3.8	1	1	2.2	2.2	2.2	3	2	2.3	2.4	2.5	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1999	3	3	1.4	1.6	2.1	1	1	0.7	0.7	0.7	1	1	1.5	1.5	1.5	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2000	20	7	1.1	1.6	2.5	0	0	0.0	0.0	0.0	1	1	2.1	2.1	2.1	2	2	1.5	2.4	3.3	0	0	0.0	0.0	0.0
2001	10	3	1.6	1.9	2.2	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	1	1	2.7	2.7	2.7	0	0	0.0	0.0	0.0
2002	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2003	30	10	1.7	3.2	4.2	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2004	12	2	1.2	2.0	3.1	0	0	0.0	0.0	0.0	1	1	2.6	2.6	2.6	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2005	98	19	1.1	2.0	6.2	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2006	14	7	1.5	2.4	3.9	0	0	0.0	0.0	0.0	2	1	1.9	2.1	2.3	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2007	26	6	1.4	2.1	3.7	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2008	13	4	1.4	2.0	2.5	0	0	0.0	0.0	0.0	2	2	1.3	1.5	1.7	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2009	27	14	1.3	1.9	2.6	0	0	0.0	0.0	0.0	2	2	1.3	1.4	1.5	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2010	20	12	1.5	2.1	2.4	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2011	19	11	1.4	2.1	2.9	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2012	7	2	1.7	2.4	4.4	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2013	4	2	2.0	3.3	4.4	3	2	1.5	1.8	2.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2014	11	6	1.5	2.2	2.8	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2015	8	2	1.3	2.5	4.2	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2016	28	9	1.0	1.6	3.2	1	1	0.9	0.9	0.9	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2017	14	7	1.1	2.2	4.3	5	3	0.8	1.4	2.6	8	7	0.6	1.1	1.9	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2018	63	17	0.4	2.1	4.2	19	5	0.9	1.7	2.9	18	5	0.7	1.3	2.4	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2019	267	59	0.7	1.6	6.8	13	8	0.7	1.2	2.2	12	11	0.9	2.5	7.7	3	3	1.1	1.6	1.8	0	0	0.0	0.0	0.0
2020	226	45	0.4	1.6	4.2	15	6	0.7	1.0	1.5	9	4	0.8	1.4	3.0	7	6	0.7	1.4	3.9	3	3	1.3	1.7	2.2

**Table 8 continued.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by state and year.

Year	RI					MA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1982	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1983	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1984	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1985	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1986	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1987	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1988	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1989	1	1	2.7	2.7	2.7	0	0	0.0	0.0	0.0
1990	7	2	2.6	3.9	6.8	0	0	0.0	0.0	0.0
1991	1	1	3.5	3.5	3.5	17	8	2.9	4.1	6.8
1992	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1993	0	0	0.0	0.0	0.0	1	1	3.1	3.1	3.1
1994	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1995	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1996	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1997	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1998	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
1999	1	1	3.0	3.0	3.0	0	0	0.0	0.0	0.0
2000	0	0	0.0	0.0	0.0	1	1	3.3	3.3	3.3
2001	0	0	0.0	0.0	0.0	3	2	3.3	4.0	4.9
2002	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2003	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2004	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2005	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2006	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2007	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2008	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2009	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2010	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2011	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2012	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2013	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0

Year	RI					MA				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2014	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2015	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2016	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2017	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0
2018	0	0	0.0	0.0	0.0	1	1	5.8	5.8	5.8
2019	0	0	0.0	0.0	0.0	2	2	1.8	1.8	1.8
2020	2	2	1.3	1.5	1.8	0	0	0.0	0.0	0.0

**Table 9.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Spanish Mackerel by mode and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths. MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt					Hbt					Priv					Shore				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	21	3	360	394	570	0	0	0	0	0	116	32	225	453	685	164	43	317	404	595
1982	21	7	310	433	660	0	0	0	0	0	156	43	202	424	810	60	21	300	408	566
1983	37	14	300	430	650	0	0	0	0	0	29	15	335	486	670	41	20	335	400	510
1984	123	43	310	411	640	0	0	0	0	0	106	29	285	389	620	38	27	335	456	630
1985	71	32	320	425	670	0	0	0	0	0	148	40	250	422	695	17	10	394	439	535
1986	427	144	240	456	800	2	2	300	390	480	353	103	220	423	700	63	27	205	381	494
1987	833	221	230	432	765	0	0	0	0	0	1,263	355	267	424	865	57	35	240	359	540
1988	1,049	167	210	410	729	0	0	0	0	0	1,427	354	200	434	835	119	64	255	427	800
1989	1,483	199	210	380	850	2	2	373	408	442	1,595	415	221	399	753	364	129	200	366	660
1990	1,418	210	210	403	885	0	0	0	0	0	2,203	499	210	389	901	137	72	230	422	713
1991	1,655	230	205	405	788	48	6	358	396	425	1,894	520	160	404	889	437	195	232	380	788
1992	696	131	255	415	760	2	2	422	556	691	1,849	449	190	400	841	342	151	252	396	840
1993	498	74	228	396	720	0	0	0	0	0	1,197	316	228	403	754	222	101	241	410	600
1994	1,678	179	182	382	746	1	1	451	451	451	1,645	377	162	381	733	285	131	240	388	600
1995	575	74	208	381	715	0	0	0	0	0	871	226	250	377	809	149	72	288	379	631
1996	932	156	250	391	857	0	0	0	0	0	1,019	257	253	397	1,782	219	81	250	394	672
1997	1,273	185	225	401	789	0	0	0	0	0	1,471	310	170	414	845	296	111	227	418	628
1998	889	165	233	395	710	2	2	338	415	493	829	244	224	406	790	179	90	285	400	635
1999	1,427	194	280	376	940	0	0	0	0	0	1,115	289	216	405	695	318	145	250	401	635
2000	937	144	262	368	940	1	1	458	458	458	1,540	344	228	397	754	251	110	148	423	566
2001	738	125	300	391	775	0	0	0	0	0	1,508	363	264	413	809	369	150	290	409	659
2002	798	126	249	367	704	0	0	0	0	0	1,257	335	241	410	712	350	161	242	414	602
2003	512	78	283	398	727	2	1	435	442	450	1,112	320	275	401	729	323	147	292	392	575
2004	487	94	277	411	791	0	0	0	0	0	842	261	281	444	748	159	72	305	418	748
2005	527	86	311	404	702	0	0	0	0	0	760	233	303	398	742	182	90	295	422	631
2006	245	55	290	430	1,001	1	1	401	401	401	722	220	282	435	900	140	62	310	420	697
2007	212	52	298	397	660	0	0	0	0	0	882	275	289	427	726	213	120	268	395	582
2008	544	85	235	390	678	0	0	0	0	0	1,125	269	227	397	664	234	114	268	392	579
2009	265	63	304	399	691	1	1	317	317	317	1,251	318	289	400	780	296	118	290	419	695
2010	614	158	272	388	641	0	0	0	0	0	1,332	467	280	418	698	467	197	304	421	620
2011	642	136	293	373	713	0	0	0	0	0	989	303	282	410	791	331	140	226	391	637

Year	Cbt					Hbt					Priv					Shore				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2012	703	127	258	388	712	0	0	0	0	0	1,599	461	294	392	702	381	171	267	393	660
2013	387	54	257	393	600	0	0	0	0	0	735	234	294	389	688	393	151	270	374	573
2014	1,200	191	228	364	760	0	0	0	0	0	668	213	291	400	661	324	149	260	380	619
2015	1,286	250	234	369	660	2	2	288	316	345	718	215	265	378	696	221	99	260	370	589
2016	1,838	326	280	357	669	2	2	310	323	336	754	201	296	368	653	224	97	260	379	596
2017	1,598	275	261	376	690	0	0	0	0	0	750	236	287	381	638	148	77	300	422	622
2018	2,818	439	230	392	690	25	4	259	425	606	1,070	290	276	391	680	298	129	303	393	561
2019	2,793	426	235	379	715	45	8	307	389	554	1,449	359	235	391	862	481	171	291	369	519
2020	3,737	483	228	382	698	70	9	259	402	606	1,328	338	284	399	734	583	200	270	378	668

**Table 10.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by mode and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish weights. MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt					Hbt					Priv					Shore				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	19	3	0.9	1.2	1.9	0	0	0.0	0.0	0.0	116	32	0.3	2.3	5.3	164	43	0.7	1.4	2.9
1982	9	7	0.8	2.2	5.6	0	0	0.0	0.0	0.0	156	43	0.2	1.8	8.4	60	21	0.4	1.3	3.3
1983	37	14	0.2	1.6	3.6	0	0	0.0	0.0	0.0	29	15	0.9	2.5	5.7	41	20	0.9	1.3	3.1
1984	123	43	0.4	1.6	5.2	0	0	0.0	0.0	0.0	106	29	0.7	1.3	4.4	38	27	0.7	2.0	4.6
1985	71	32	0.9	1.7	7.5	0	0	0.0	0.0	0.0	148	40	0.2	1.5	6.5	17	10	1.1	1.7	2.4
1986	427	144	0.4	2.2	10.1	2	2	0.9	1.6	2.2	353	103	0.2	1.7	7.4	63	27	0.2	1.2	3.1
1987	833	221	0.2	2.0	8.9	0	0	0.0	0.0	0.0	1,263	355	0.2	1.9	8.9	57	35	0.2	1.1	3.4
1988	383	167	0.2	1.3	4.9	0	0	0.0	0.0	0.0	412	354	0.4	1.8	6.7	54	64	0.2	1.6	5.3
1989	1,483	199	0.2	1.4	11.1	2	2	1.2	1.5	1.8	1,595	415	0.2	1.7	9.1	364	129	0.2	1.1	5.2

Year	Cbt					Hbt					Priv					Shore				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1990	1,411	210	0.2	1.6	13.3	0	0	0.0	0.0	0.0	2,203	499	0.2	1.4	12.4	137	72	0.3	1.7	7.5
1991	1,634	230	0.2	1.7	11.0	48	6	1.0	1.4	2.5	1,894	520	0.2	1.6	11.7	437	195	0.2	1.5	11.1
1992	694	131	0.2	1.7	8.0	2	2	1.3	3.7	6.0	1,843	449	0.2	1.4	9.2	334	151	0.2	1.5	7.3
1993	498	74	0.2	1.4	7.7	0	0	0.0	0.0	0.0	1,197	316	0.2	1.5	8.0	222	101	0.2	1.5	4.4
1994	1,678	179	0.1	1.2	7.5	1	1	3.3	3.3	3.3	1,645	377	0.2	1.2	8.3	285	131	0.3	1.2	4.9
1995	575	74	0.3	1.2	7.7	0	0	0.0	0.0	0.0	871	226	0.2	1.2	10.3	149	72	0.3	1.1	4.4
1996	932	156	0.2	1.2	10.5	0	0	0.0	0.0	0.0	1,018	257	0.2	1.3	8.0	219	81	0.3	1.3	4.9
1997	1,273	185	0.3	1.4	9.9	0	0	0.0	0.0	0.0	1,471	310	0.1	1.5	9.6	296	111	0.4	1.7	5.3
1998	889	165	0.4	1.5	7.8	2	2	1.2	2.1	3.1	829	244	0.2	1.6	9.5	179	90	0.4	1.4	5.5
1999	1,427	194	0.2	1.3	11.7	0	0	0.0	0.0	0.0	1,115	289	0.2	1.5	7.0	318	145	0.4	1.3	4.5
2000	937	144	0.2	1.1	11.7	1	1	2.1	2.1	2.1	1,540	344	0.2	1.3	6.7	251	110	0.1	1.4	4.5
2001	738	125	0.4	1.4	10.1	0	0	0.0	0.0	0.0	1,508	363	0.2	1.4	10.9	369	150	0.6	1.4	6.0
2002	798	126	0.2	1.2	7.7	0	0	0.0	0.0	0.0	1,257	335	0.3	1.5	5.9	350	161	0.4	1.5	4.7
2003	512	78	0.5	1.8	12.2	2	1	2.0	2.1	2.2	1,112	320	0.3	1.4	8.3	323	147	0.4	1.1	3.2
2004	487	94	0.4	1.5	8.1	0	0	0.0	0.0	0.0	842	261	0.3	1.9	8.0	159	72	0.5	1.6	8.0
2005	527	86	0.4	1.4	6.2	0	0	0.0	0.0	0.0	760	233	0.2	1.3	7.2	182	90	0.6	1.6	5.1
2006	229	55	0.6	1.8	11.0	1	1	1.2	1.2	1.2	722	220	0.4	1.8	12.7	140	62	0.4	1.4	5.5
2007	212	52	0.4	1.3	5.5	0	0	0.0	0.0	0.0	882	275	0.4	1.7	6.5	213	120	0.4	1.3	5.1
2008	544	85	0.4	1.2	6.0	0	0	0.0	0.0	0.0	1,125	269	0.3	1.4	7.2	234	114	0.4	1.2	5.1
2009	265	63	0.4	1.3	5.1	1	1	0.7	0.7	0.7	1,251	318	0.3	1.4	8.8	296	118	0.3	1.7	6.0
2010	614	158	0.4	1.3	5.5	0	0	0.0	0.0	0.0	1,332	467	0.3	1.6	6.6	467	197	0.4	1.5	5.5
2011	642	136	0.2	1.1	6.0	0	0	0.0	0.0	0.0	989	303	0.4	1.6	9.2	331	140	0.4	1.3	4.3
2012	703	127	0.3	1.3	5.7	0	0	0.0	0.0	0.0	1,599	461	0.4	1.4	6.6	381	171	0.3	1.3	5.5
2013	384	54	0.4	1.3	4.2	0	0	0.0	0.0	0.0	735	234	0.4	1.4	7.5	393	151	0.4	1.1	3.2
2014	1,200	191	0.3	1.0	7.5	0	0	0.0	0.0	0.0	668	213	0.4	1.3	5.5	324	149	0.3	1.2	4.5
2015	1,286	250	0.4	1.1	5.5	2	2	0.5	0.7	0.9	718	215	0.4	1.2	7.3	221	99	0.3	1.1	4.2
2016	1,838	326	0.4	0.9	5.6	2	2	0.6	0.6	0.7	754	201	0.4	1.1	5.8	224	97	0.3	1.2	4.0
2017	1,598	275	0.4	1.1	6.3	0	0	0.0	0.0	0.0	750	236	0.4	1.2	5.7	148	77	0.5	1.6	5.4
2018	2,818	439	0.3	1.3	6.9	25	4	0.4	1.7	4.2	1,070	290	0.3	1.2	6.2	298	129	0.4	1.3	3.2
2019	2,793	426	0.3	1.2	5.5	45	8	0.6	1.2	3.0	1,449	359	0.3	1.3	7.7	481	171	0.4	1.0	3.0
2020	3,737	483	0.3	1.2	8.2	70	9	0.4	1.4	4.2	1,328	338	0.4	1.4	7.9	583	200	0.4	1.2	5.7

**Table 11.** Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Spanish Mackerel by year. Summaries include the number of fish for which size information was collected by MRIP (Fish), the number of angler trips from which those fish were sampled (Trp), and the minimum (Min), arithmetic mean (Avg), and maximum (Max) size of fish lengths and weights.

Year	Length					Weight				
	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	301	78	225	422	685	299	78	0.3	1.7	5.3
1982	237	71	202	421	810	225	71	0.2	1.7	8.4
1983	107	49	300	434	670	107	49	0.2	1.7	5.7
1984	267	99	285	409	640	267	99	0.4	1.5	5.2
1985	236	82	250	424	695	236	82	0.2	1.6	7.5
1986	845	276	205	437	800	845	276	0.2	1.9	10.1
1987	2,153	611	230	425	865	2,153	611	0.2	1.9	8.9
1988	2,595	585	200	424	835	849	585	0.2	1.5	6.7
1989	3,444	745	200	387	850	3,444	745	0.2	1.5	11.1
1990	3,758	781	210	395	901	3,751	781	0.2	1.5	13.3
1991	4,034	951	160	401	889	4,013	951	0.2	1.7	11.7
1992	2,889	733	190	403	841	2,873	733	0.2	1.5	9.2
1993	1,917	491	228	402	754	1,917	491	0.2	1.5	8.0
1994	3,609	688	162	382	746	3,609	688	0.1	1.2	8.3
1995	1,595	372	208	379	809	1,595	372	0.2	1.2	10.3
1996	2,170	494	250	394	1,782	2,169	494	0.2	1.3	10.5
1997	3,040	606	170	409	845	3,040	606	0.1	1.5	9.9
1998	1,899	501	224	401	790	1,899	501	0.2	1.5	9.5
1999	2,860	628	216	390	940	2,860	628	0.2	1.4	11.7
2000	2,729	599	148	389	940	2,729	599	0.1	1.3	11.7
2001	2,615	638	264	406	809	2,615	638	0.2	1.4	10.9
2002	2,405	622	241	397	712	2,405	622	0.2	1.4	7.7
2003	1,949	546	275	399	729	1,949	546	0.3	1.5	12.2
2004	1,488	427	277	431	791	1,488	427	0.3	1.7	8.1
2005	1,469	409	295	403	742	1,469	409	0.2	1.4	7.2
2006	1,108	338	282	432	1,001	1,092	338	0.4	1.7	12.7
2007	1,307	447	268	417	726	1,307	447	0.4	1.5	6.5
2008	1,903	468	227	395	678	1,903	468	0.3	1.3	7.2
2009	1,813	500	289	403	780	1,813	500	0.3	1.4	8.8
2010	2,413	822	272	411	698	2,413	822	0.3	1.5	6.6
2011	1,962	579	226	395	791	1,962	579	0.2	1.4	9.2
2012	2,683	759	258	391	712	2,683	759	0.3	1.4	6.6
2013	1,515	439	257	386	688	1,512	439	0.4	1.3	7.5
2014	2,192	553	228	377	760	2,192	553	0.3	1.1	7.5
2015	2,227	566	234	372	696	2,227	566	0.3	1.1	7.3
2016	2,818	626	260	361	669	2,818	626	0.3	1.0	5.8
2017	2,496	588	261	381	690	2,496	588	0.4	1.2	6.3
2018	4,211	862	230	392	690	4,211	862	0.3	1.3	6.9
2019	4,768	964	235	381	862	4,768	964	0.3	1.2	7.7
2020	5,718	1,030	228	386	734	5,718	1,030	0.3	1.2	8.2

**Table 12.** Resolution of weight estimates (in pounds whole weight) for South Atlantic Spanish Mackerel by year and hierarchy level (MRIP), defined by species, region, year, state, mode, wave, and area. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019). Larger sample sizes therefore allow average weights to be calculated at finer stratifications, the finest being at the srysmwa level (Matter and Rios 2013). Annual summaries include the number of fish for which weight information was collected (Fish) and the landings-in-weight estimates (AB1.lbs) by hierarchy level. As an example, (srysmw) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular species, region, year, state, mode, and wave (i.e., weight observations collapsed across areas).

Year	Fish	AB1.lbs					
		sr	sry	srys	srysm	srysmw	srysmwa
1981	299	54,371	8,590	77,664	527,325	206,280	6,466,886
1982	225	0	661	706,806	263,003	72,276	2,510,374
1983	107	0	25,822	3,360	909,335	0	1,008
1984	267	0	0	151,165	454,329	102,497	1,687,518
1985	236	0	0	18,341	763,241	87,297	295,630
1986	845	0	4,675	500,175	473,248	334,192	1,125,526
1987	2,153	41,162	0	326,985	86,931	249,540	1,860,777
1988	849	0	8,117	281,660	2,947,764	36,766	2,720,803
1989	3,444	7,713	846	59,151	676,548	242,104	2,044,963
1990	3,751	223	16,030	623,171	1,130,704	393,037	2,459,060
1991	4,013	0	54,841	792,660	860,395	398,224	4,447,184
1992	2,873	0	31,403	102,343	632,445	910,334	2,764,629
1993	1,917	2,964	9,482	192,950	250,852	224,390	1,697,534
1994	3,609	0	19,396	169,164	302,390	152,521	1,799,664
1995	1,595	0	0	107,524	78,055	145,415	908,955
1996	2,169	0	3,229	42,127	291,450	318,176	1,174,691
1997	3,040	0	0	82,562	448,432	304,486	2,138,386
1998	1,899	0	26,873	147,439	405,203	222,889	1,766,224
1999	2,860	1,977	7,384	8,959	382,457	406,155	2,590,983
2000	2,729	16,468	10,518	173,182	439,104	293,247	3,670,761
2001	2,615	14,604	26,815	80,967	255,893	168,120	3,836,236
2002	2,405	0	6,106	119,565	313,672	127,335	4,534,450
2003	1,949	33,587	48,733	58,999	203,498	322,509	3,312,866
2004	1,488	7,734	13,182	77,962	315,515	281,022	2,378,435
2005	1,469	0	39,181	26,988	446,699	454,343	2,529,354
2006	1,092	0	19,502	132,286	475,393	183,175	1,739,992
2007	1,307	0	93	69,147	410,867	464,187	3,060,554
2008	1,903	0	16,744	56,761	167,469	342,718	3,145,145
2009	1,813	0	225	23,116	343,215	430,359	4,259,334
2010	2,413	0	0	52,571	537,250	255,649	5,227,043
2011	1,962	0	0	77,125	481,512	162,854	3,674,648
2012	2,683	0	22,935	21,903	408,398	157,807	2,213,384
2013	1,512	0	141,552	375	825,256	256,407	3,201,037
2014	2,192	1,649	39,522	4,510	384,044	489,957	2,603,136
2015	2,227	0	22,928	111,115	53,327	148,885	1,295,384
2016	2,818	0	22,510	22,526	470,711	1,317,041	2,406,138
2017	2,496	0	24,760	120,766	906,293	126,820	1,399,591

Year	Fish	AB1.lbs					
		sr	sry	srys	srysm	srysmw	srysmwa
2018	4,211	1,148	0	49,152	875,150	441,129	1,815,322
2019	4,768	1,216	36,152	14,266	677,357	564,952	3,477,987
2020	5,718	33,636	11,768	5,495	1,893,320	300,797	5,376,992

**Table 13.** Recreational Fishing Effort (in angler trips) for South Atlantic anglers by state and year (MRIP).

Year	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	Total
1981	31,660,427	1,140,686	3,499,698	6,836,050	4,688,618	4,549,773	1,071,797	10,444,221	8,906,444	2,954,427	86,327,185
1982	42,352,017	1,330,594	3,855,423	6,903,669	5,087,629	5,131,719	1,117,581	10,219,219	9,267,451	3,624,545	100,259,574
1983	40,631,469	1,393,987	4,392,586	10,203,830	3,728,378	5,112,083	1,227,016	10,484,657	9,302,121	2,854,642	100,385,228
1984	40,625,068	1,459,467	4,321,818	9,389,910	4,229,606	5,257,368	1,142,085	10,179,264	8,985,779	2,861,108	99,048,303
1985	39,643,873	1,684,391	4,285,327	8,876,360	4,319,051	4,611,188	1,068,797	11,863,455	8,487,182	2,868,047	98,950,644
1986	42,317,136	1,766,834	4,217,620	9,249,981	4,581,112	5,174,215	1,365,119	11,247,339	8,536,072	2,783,825	101,962,419
1987	44,172,997	1,773,450	4,119,771	9,122,728	4,698,205	4,798,420	1,282,065	10,536,884	8,631,274	2,842,968	102,179,910
1988	39,146,830	1,683,851	3,987,476	10,576,270	4,552,697	5,367,873	1,482,817	9,804,983	8,638,487	2,995,841	98,801,162
1989	39,253,969	1,801,763	4,321,550	10,754,246	4,238,727	4,989,597	1,311,046	10,445,872	8,443,049	3,066,939	99,504,343
1990	39,258,351	1,834,320	4,571,431	12,207,378	4,672,294	5,501,702	1,304,131	10,786,888	8,676,378	3,015,176	103,974,340
1991	41,678,398	1,804,463	4,904,800	11,315,841	5,406,775	5,510,387	1,324,881	11,153,812	8,865,604	3,056,585	107,308,550
1992	42,875,507	1,753,767	4,830,569	11,965,169	5,119,940	5,761,255	1,442,484	10,875,782	8,771,443	2,934,464	108,831,619
1993	41,980,014	1,769,651	4,977,833	10,933,941	5,670,076	5,987,611	1,637,833	11,453,674	9,561,922	2,779,149	109,903,608
1994	41,906,013	1,800,943	4,890,627	10,545,102	6,018,445	6,041,965	1,587,894	11,664,779	9,422,521	2,763,578	110,610,598
1995	38,928,615	1,743,589	4,643,418	10,020,835	6,204,090	6,779,568	1,909,148	11,984,418	8,865,924	2,754,332	107,900,297
1996	41,111,552	1,792,198	4,740,103	10,413,771	6,529,084	6,816,287	1,766,382	12,366,286	9,145,226	2,909,421	111,812,480
1997	42,185,109	1,794,338	5,117,321	11,109,149	6,991,128	6,997,416	1,785,252	13,293,978	9,659,354	2,947,626	117,251,797
1998	41,282,599	1,897,330	5,062,297	11,115,182	7,053,436	7,063,743	2,003,360	12,813,743	9,095,417	3,093,446	116,328,206
1999	39,870,443	2,061,785	5,368,897	12,669,214	6,720,342	7,484,466	2,305,379	14,510,272	10,583,737	3,264,797	121,370,980
2000	43,809,306	2,365,941	5,969,116	15,358,914	7,097,045	7,628,605	2,465,117	15,697,511	11,502,123	3,152,493	132,347,733
2001	43,765,525	2,312,729	6,070,604	15,144,269	7,827,638	7,469,154	2,441,331	16,580,861	11,874,473	3,315,755	135,459,879
2002	44,866,670	2,323,023	6,491,172	15,146,182	7,900,100	7,374,243	2,256,127	15,331,059	12,109,849	3,342,254	135,945,253
2003	45,044,832	2,500,555	6,499,483	15,539,344	7,696,312	7,760,416	2,406,709	17,044,364	13,258,029	3,260,306	139,700,970
2004	42,936,332	2,551,027	6,973,606	17,400,870	8,190,341	7,882,066	2,627,772	16,084,727	13,484,450	3,181,184	140,603,225
2005	47,794,997	2,717,106	7,156,559	17,150,375	8,437,457	8,129,476	2,663,907	16,879,986	14,150,509	3,246,157	147,424,114
2006	49,056,377	2,643,209	7,462,121	19,614,943	7,818,271	7,850,750	2,613,204	17,364,972	13,721,918	3,162,606	150,848,736
2007	48,447,259	2,823,131	7,364,699	18,146,146	7,907,638	8,123,248	2,889,179	17,349,411	14,201,001	3,309,176	149,253,447
2008	45,921,204	2,855,466	8,062,558	19,328,098	8,497,653	8,115,170	2,665,701	17,744,685	13,791,345	3,568,590	150,084,072
2009	49,009,618	2,692,566	7,557,887	19,345,187	8,410,827	8,843,232	2,949,624	17,659,358	13,658,548	3,387,779	154,000,956
2010	48,952,258	2,707,465	8,027,939	20,173,323	8,744,763	9,861,682	3,096,595	18,684,666	14,166,605	3,696,314	159,270,306
2011	45,795,256	2,902,422	8,507,040	19,468,850	8,876,086	9,721,166	2,878,341	17,532,381	14,206,022	3,478,843	153,159,033
2012	39,677,797	2,989,846	8,110,949	18,555,348	8,287,084	9,539,266	2,516,422	18,153,443	14,632,547	3,734,050	145,000,690

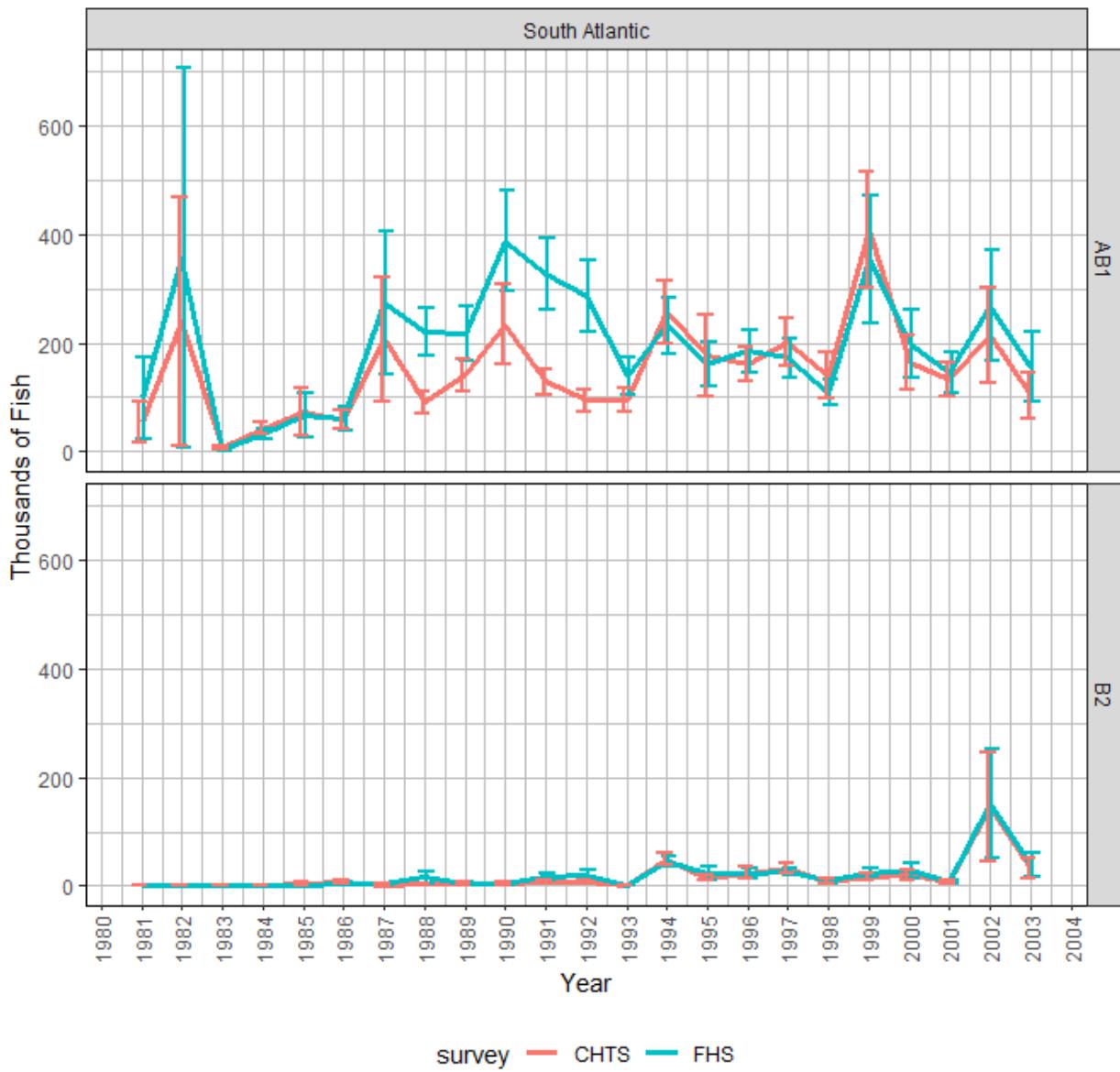
<b>Year</b>	<b>FLE</b>	<b>GA</b>	<b>SC</b>	<b>NC</b>	<b>VA</b>	<b>MD</b>	<b>DE</b>	<b>NJ</b>	<b>NY</b>	<b>CT</b>	<b>Total</b>
2013	37,306,011	3,319,694	9,751,329	18,085,862	8,006,784	9,709,712	2,435,144	15,766,890	15,209,054	3,506,048	139,339,878
2014	43,967,506	3,736,954	8,745,715	18,926,498	7,409,713	9,394,453	2,491,369	17,012,498	15,401,849	3,640,810	145,816,430
2015	42,395,466	4,108,912	8,962,210	20,322,840	6,727,321	9,129,467	2,070,558	14,484,669	15,271,283	3,843,978	140,418,204
2016	38,695,081	3,880,485	9,335,002	21,158,845	7,247,361	9,364,384	2,129,937	13,851,906	15,765,211	4,229,759	138,910,130
2017	40,403,524	4,624,303	9,388,908	22,452,276	6,748,740	8,342,835	1,990,769	12,288,340	16,633,982	3,937,262	139,623,519
2018	43,986,704	4,592,649	9,897,323	16,624,306	6,386,006	6,761,984	2,147,069	12,493,094	11,242,165	3,542,791	129,234,990
2019	35,930,004	4,020,594	11,838,556	17,539,840	7,237,925	6,836,036	2,107,651	13,380,242	13,411,743	3,766,030	129,514,063
2020	40,436,260	4,890,201	8,733,689	16,399,233	8,164,266	7,974,009	2,118,344	16,016,877	14,841,036	4,195,554	135,597,694

**Table 13 continued.** Recreational Fishing Effort (in angler trips) for Atlantic anglers by state and year.

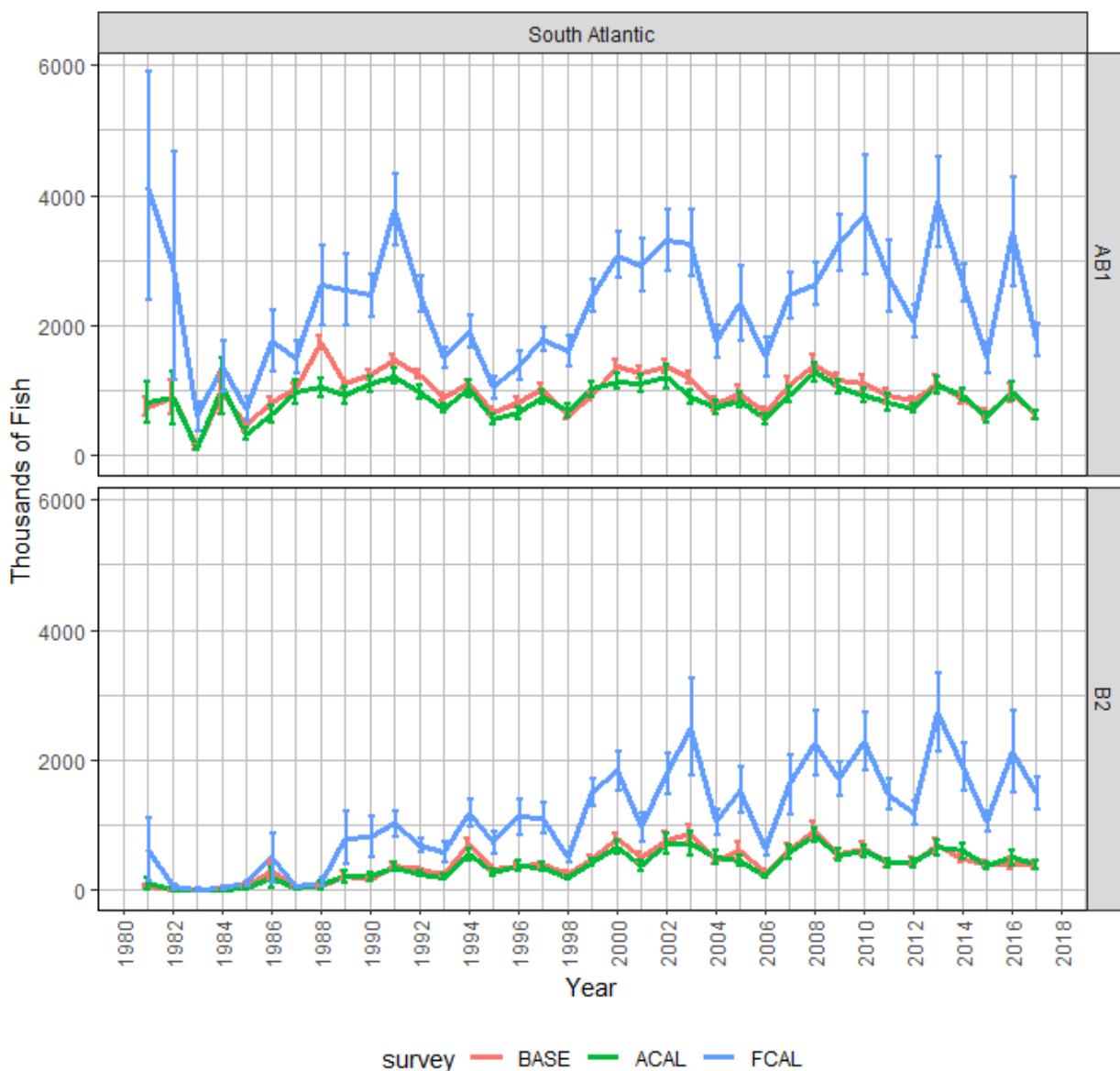
Year	RI	MA	NH	ME	Total
1981	2,300,146	7,178,372	265,333	831,193	86,327,185
1982	2,376,742	7,739,640	398,632	854,713	100,259,574
1983	2,402,982	7,605,994	297,865	747,618	100,385,228
1984	2,277,784	7,174,314	326,974	817,758	99,048,303
1985	2,680,446	7,483,184	166,322	913,021	98,950,644
1986	2,339,860	7,141,469	360,638	881,199	101,962,419
1987	2,523,175	6,410,706	343,612	923,655	102,179,910
1988	2,403,935	6,726,787	393,777	1,039,538	98,801,162
1989	2,660,656	6,670,771	445,789	1,100,369	99,504,343
1990	2,881,911	7,680,583	406,677	1,177,120	103,974,340
1991	2,682,671	7,867,719	390,620	1,345,994	107,308,550
1992	2,666,256	8,265,920	356,025	1,213,038	108,831,619
1993	2,549,680	8,766,087	456,370	1,379,767	109,903,608
1994	2,642,026	9,393,081	597,307	1,336,317	110,610,598
1995	2,883,069	9,214,765	555,159	1,413,367	107,900,297
1996	2,797,720	9,476,761	586,679	1,361,010	111,812,480
1997	3,379,408	9,914,061	584,294	1,493,363	117,251,797
1998	3,789,827	10,026,868	624,017	1,406,941	116,328,206
1999	4,376,655	10,043,973	612,300	1,498,720	121,370,980
2000	4,326,027	10,652,619	647,212	1,675,704	132,347,733
2001	4,834,180	11,504,708	655,208	1,663,444	135,459,879
2002	4,636,125	11,483,210	843,967	1,841,272	135,945,253
2003	4,636,615	11,084,074	851,155	2,118,776	139,700,970
2004	4,666,310	11,746,505	869,049	2,008,986	140,603,225
2005	4,187,656	11,638,548	947,950	2,323,431	147,424,114
2006	4,282,997	12,005,419	882,560	2,369,389	150,848,736
2007	3,579,651	12,197,090	863,489	2,052,329	149,253,447
2008	3,658,000	12,605,363	865,157	2,405,082	150,084,072
2009	4,062,597	12,951,528	834,862	2,637,343	154,000,956
2010	4,154,975	14,157,846	787,908	2,057,967	159,270,306
2011	3,749,950	13,461,841	809,873	1,770,962	153,159,033
2012	3,956,500	12,221,447	857,582	1,768,409	145,000,690
2013	3,315,911	10,125,392	906,394	1,895,653	139,339,878
2014	3,350,834	8,807,604	954,392	1,976,235	145,816,430
2015	3,133,628	7,282,289	980,936	1,704,647	140,418,204
2016	2,998,761	7,244,235	1,060,766	1,948,397	138,910,130
2017	2,317,766	7,774,866	972,380	1,747,568	139,623,519
2018	2,553,265	6,705,398	676,086	1,626,150	129,234,990
2019	3,739,018	7,422,488	609,003	1,674,933	129,514,063
2020	2,848,179	5,949,641	920,293	2,110,112	135,597,694

**Table 14.** Recreational Fishing Effort (in angler trips) for South Atlantic anglers by mode and year (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

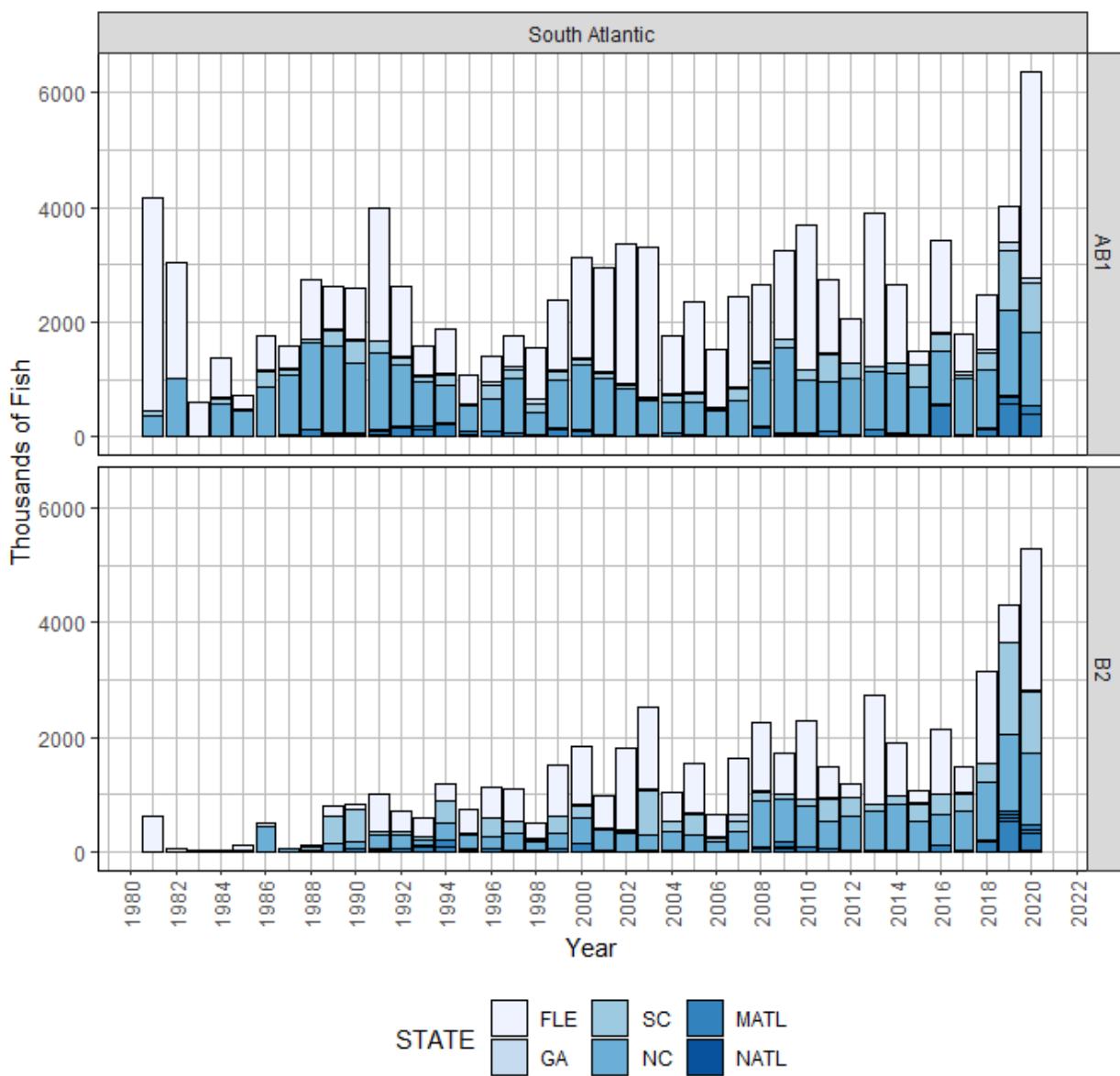
Year	Cbt	Cbt/Hbt	Hbt	Priv	Shore	Total
1981	415,994	2,675,775		23,845,140	59,390,275	86,327,184
1982	438,618	3,948,081		26,394,869	69,478,007	100,259,575
1983	490,020	3,086,778		26,574,356	70,234,073	100,385,227
1984	569,709	2,194,594		28,555,168	67,728,831	99,048,302
1985	585,830	2,199,145		31,471,934	64,693,735	98,950,644
1986	665,307	2,555,264		32,474,004	66,267,844	101,962,419
1987	573,922	1,749,097		31,690,235	68,166,656	102,179,910
1988	526,844	1,799,234		29,930,508	66,544,574	98,801,160
1989	584,673	1,599,779		30,592,299	66,727,590	99,504,341
1990	505,299	1,684,311		31,014,006	70,770,723	103,974,339
1991	418,189	1,856,123		31,624,846	73,409,394	107,308,552
1992	451,955	1,566,647		32,580,845	74,232,170	108,831,617
1993	463,765	2,195,281		33,560,753	73,683,812	109,903,611
1994	479,332	1,855,960		34,355,938	73,919,366	110,610,596
1995	473,223	1,973,135		33,371,527	72,082,411	107,900,296
1996	474,841	1,652,562		35,216,605	74,468,473	111,812,481
1997	476,893	1,733,223		37,491,047	77,550,635	117,251,798
1998	473,875	1,481,991		38,141,454	76,230,884	116,328,204
1999	462,059	1,452,480		40,156,499	79,299,941	121,370,979
2000	394,486	1,530,369		45,277,147	85,145,730	132,347,732
2001	444,747	1,601,931		45,397,107	88,016,095	135,459,880
2002	510,894	1,436,232		47,136,997	86,861,131	135,945,254
2003	498,200	1,579,900		49,104,015	88,518,856	139,700,971
2004	1,222,739		674,260	48,929,635	89,776,591	140,603,225
2005	1,436,443		767,540	51,118,309	94,101,821	147,424,113
2006	1,200,111		649,374	52,933,863	96,065,388	150,848,736
2007	1,666,194		971,084	54,070,891	92,545,278	149,253,447
2008	1,207,701		871,784	52,110,029	95,894,557	150,084,071
2009	1,212,634		790,333	54,616,449	97,381,539	154,000,955
2010	963,387		580,114	58,670,006	99,056,800	159,270,307
2011	1,169,790		600,817	54,927,395	96,461,033	153,159,035
2012	1,090,742		628,596	51,660,512	91,620,841	145,000,691
2013	1,249,327		968,396	50,104,303	87,017,851	139,339,877
2014	1,279,877		831,745	50,566,939	93,137,867	145,816,428
2015	1,425,231		696,087	47,744,811	90,552,076	140,418,205
2016	955,223		470,309	46,990,152	90,494,447	138,910,131
2017	1,022,546		596,982	46,948,363	91,055,627	139,623,518
2018	1,034,747		535,555	43,525,991	84,138,698	129,234,991
2019	1,167,626		598,715	43,275,850	84,471,872	129,514,063
2020	945,411		496,200	46,917,707	87,238,376	135,597,694



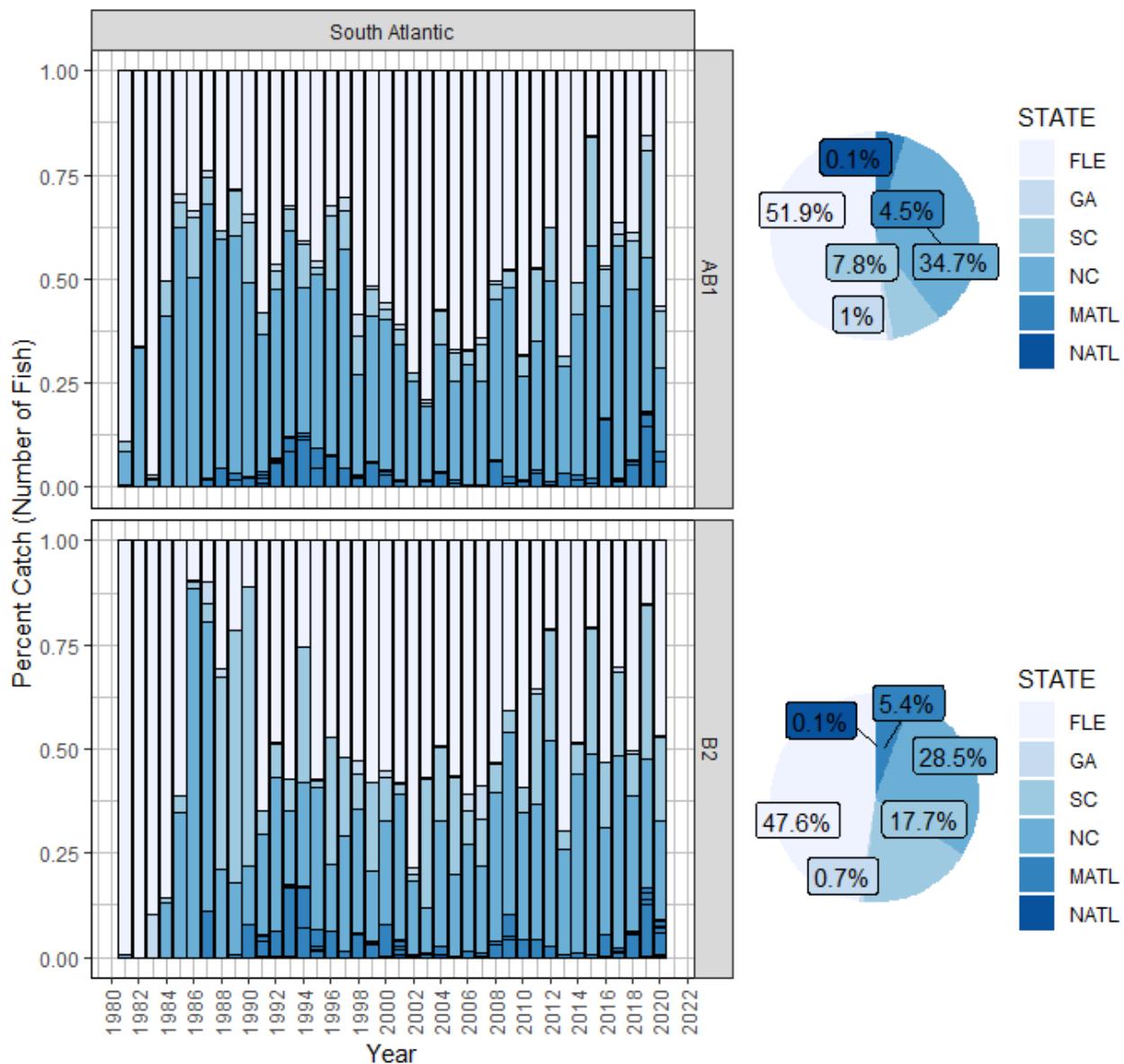
**Figure 1.** Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Spanish Mackerel from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the South Atlantic between 1981 and 2003 (MRIP). The charterboat calibration approach is discussed in Dettloff and Matter (2019; SEDAR64-RD-12).



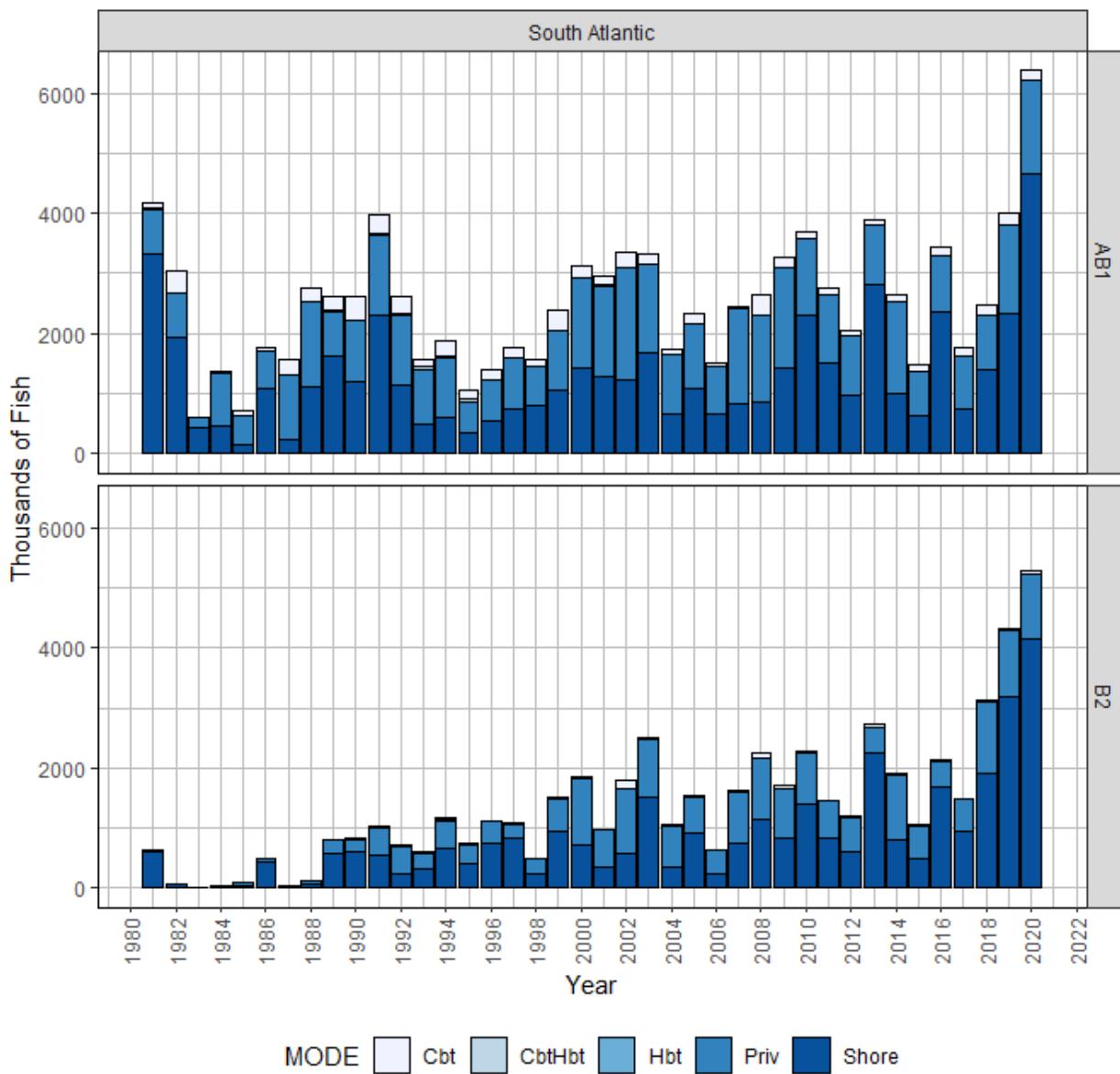
**Figure 2.** MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Spanish Mackerel in the Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish (NMFS).



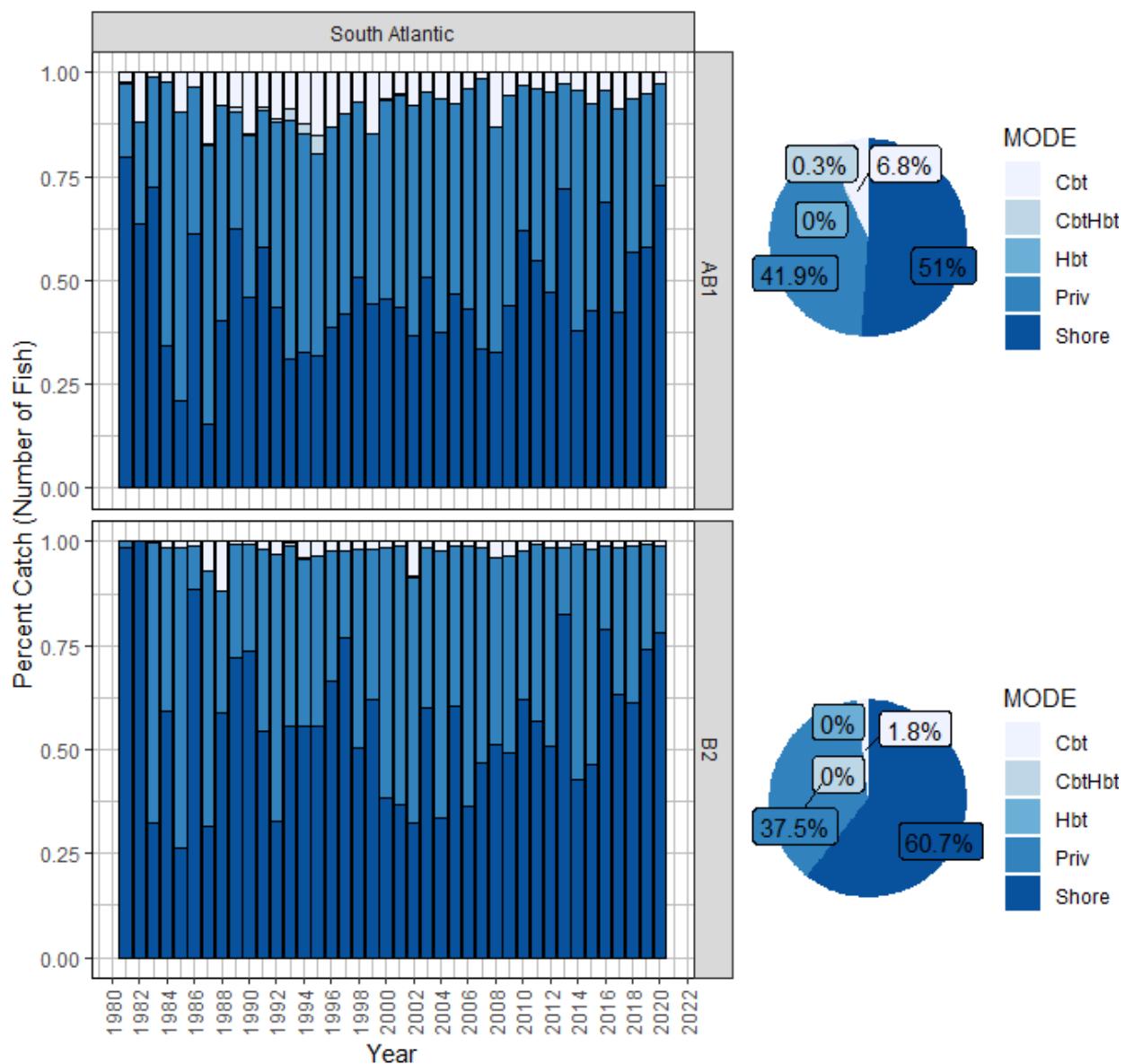
**Figure 3.** Annual Spanish Mackerel landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2020 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states contributed less than ten percent to the total catch (Fig3a) and were combined for plotting purposes.



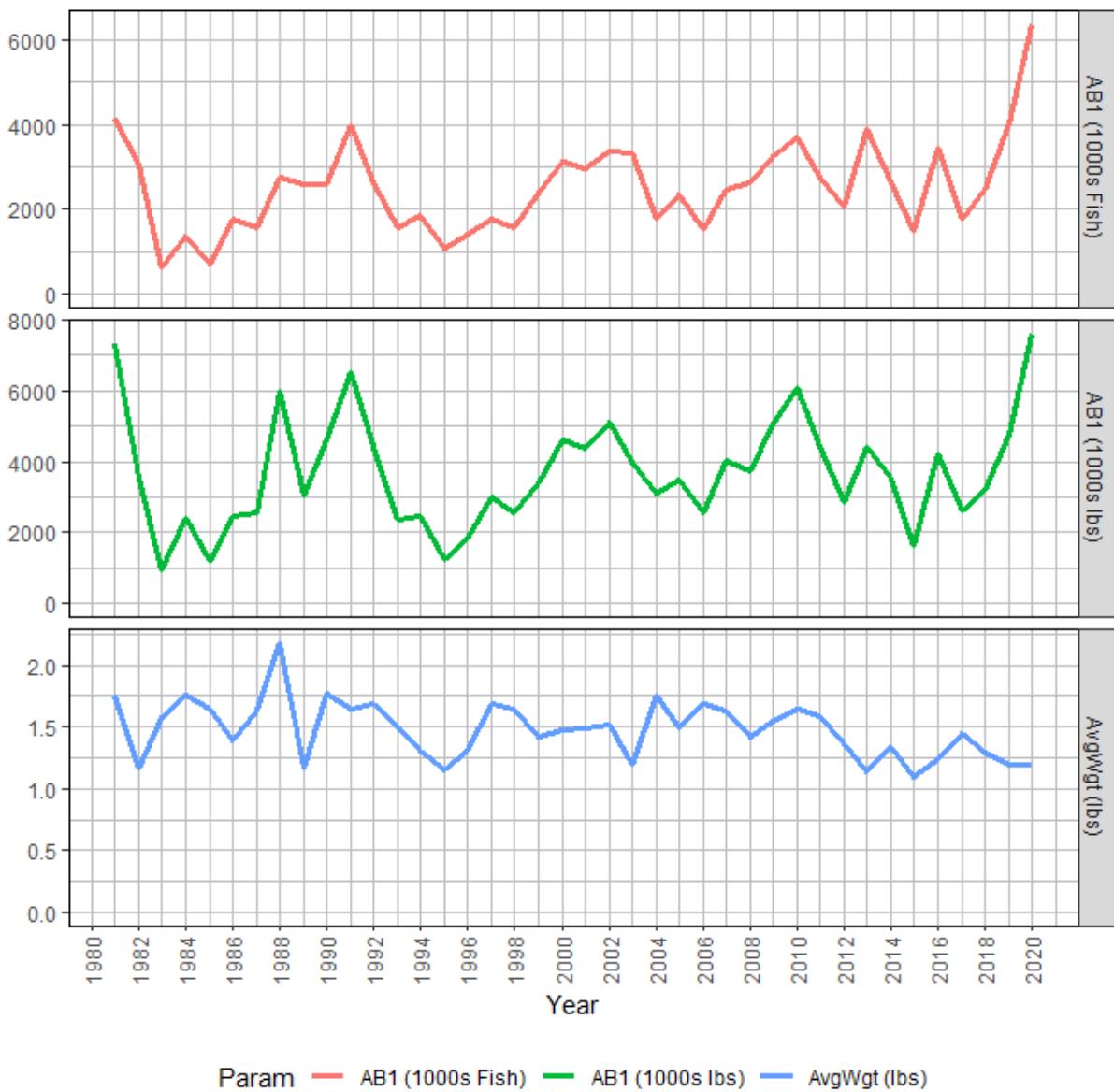
**Figure 3a.** Percent of Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2020 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states were combined for plotting purposes.



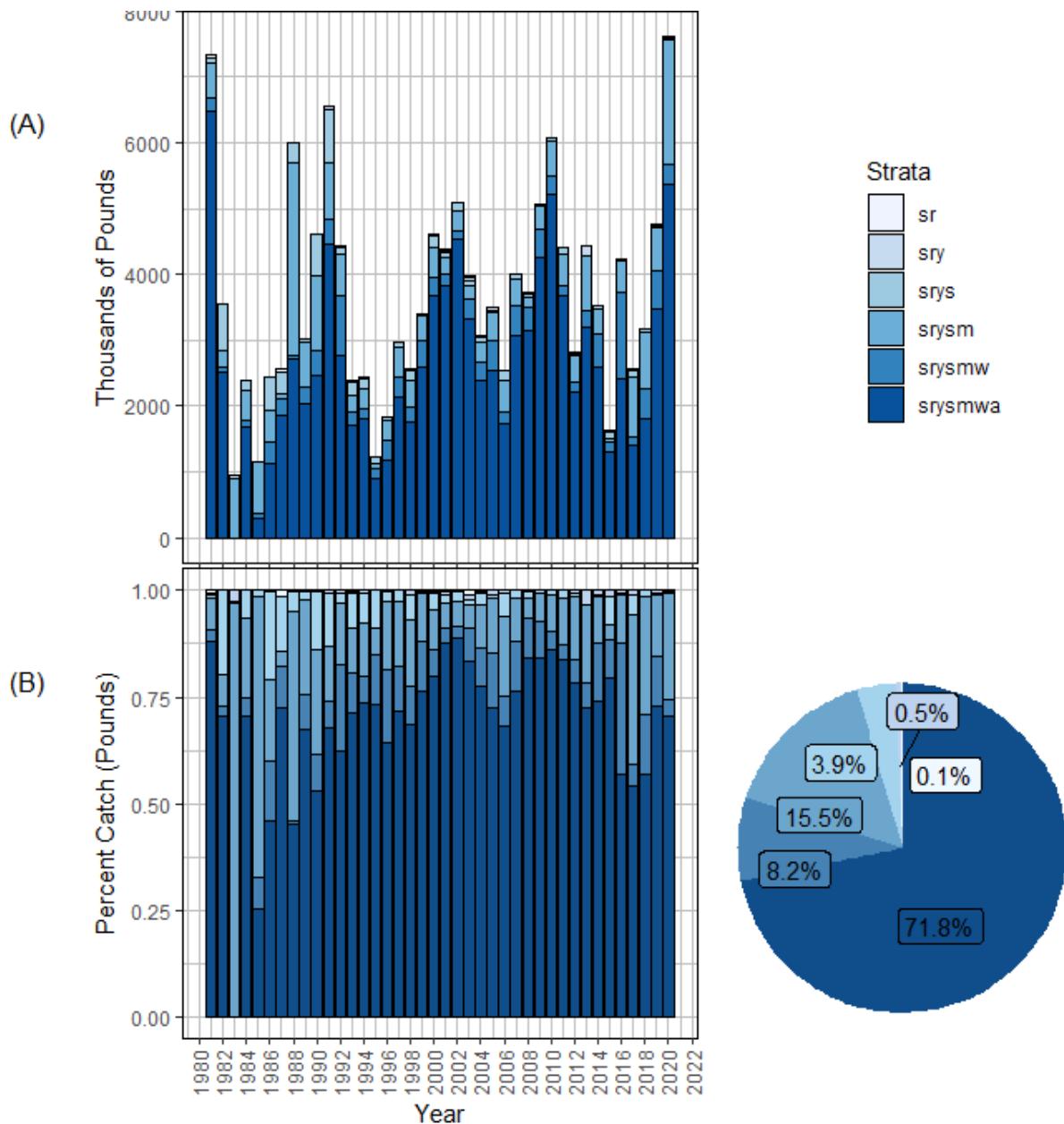
**Figure 4.** Annual Spanish Mackerel landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2020 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.



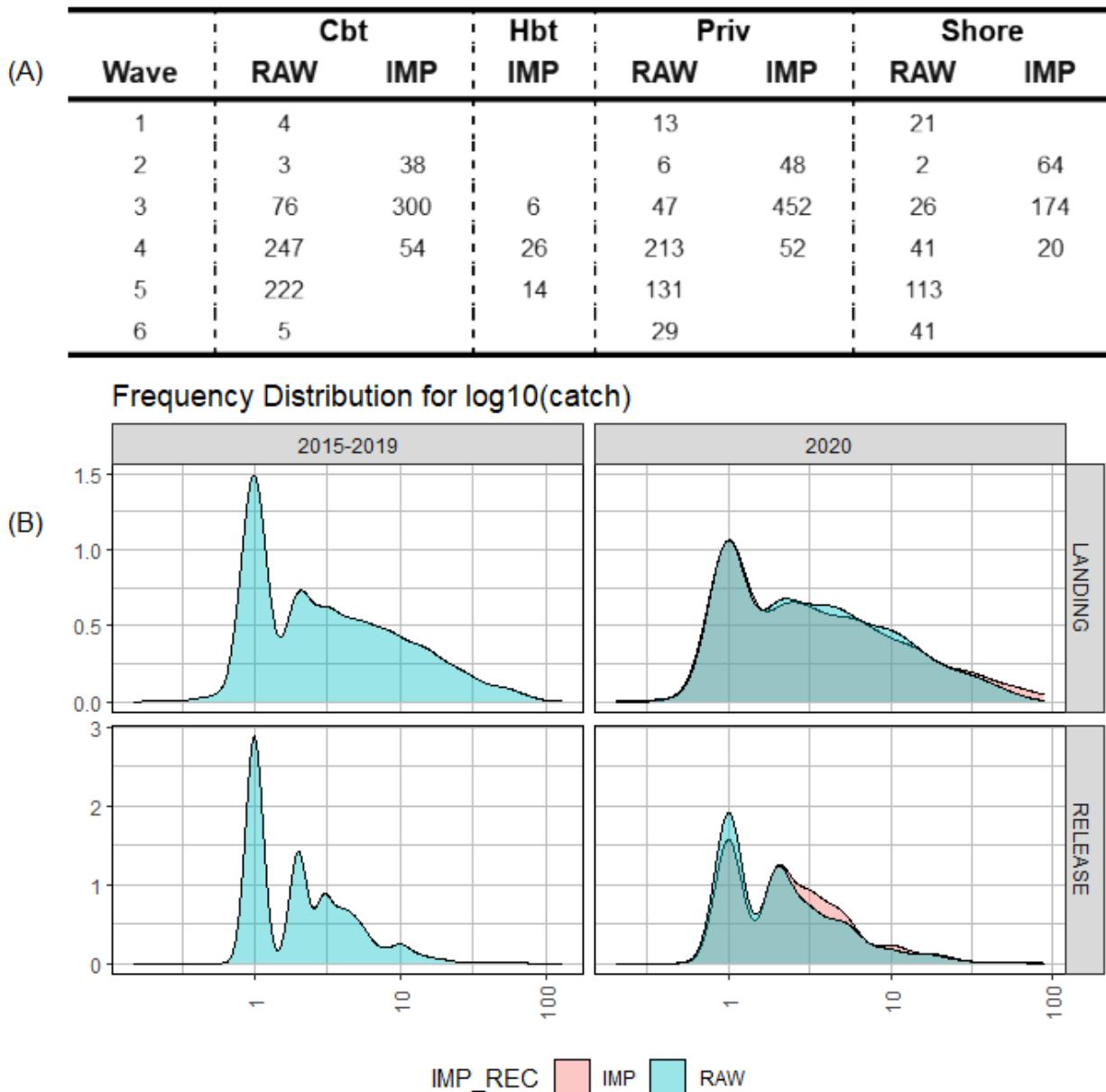
**Figure 4a.** Percent of Spanish Mackerel landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2020 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.



**Figure 5.** Estimates of annual landings for Spanish Mackerel in the South Atlantic, as estimated from MRIP: estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).



**Figure 6.** Annual landings estimates of South Atlantic Spanish Mackerel in thousands of pounds whole weight by hierarchy level (MRIP), defined by **species**, **region**, **year**, **state**, **mode**, **wave**, and **area**. Landings are grouped by the strata at which average weights were estimated, the finest stratification being at the srysmwa level (Matter and Rios 2013). As an example, (srysmw) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **species**, **region**, **year**, **state**, **mode**, and **wave** (i.e., weight observations collapsed across areas). Landings are provided (A) in absolute pounds and (B) as a percentage of total landings-in-weight, which is summarized by year (stacked bar plot) and across all years (pie chart).



**Figure 7.** COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic Spanish mackerel. No 2020 data was imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the 2020 APAIS (RAW) vs. those imputed from 2018 and 2019 intercepts (IMP). (B) Distribution of (log-transformed) Spanish mackerel catch between 2015-2019, in raw 2020 APAIS data, and in 2020 imputations. Refer to Cody (2021) for more information on COVID data gaps in MRIP.