General Recreational Survey Data for Black Sea Bass in the South Atlantic

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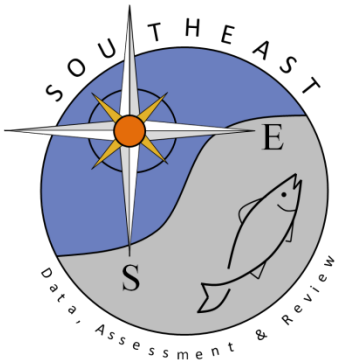

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General Recreational Survey Data for Black Sea Bass in the South Atlantic

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

Parameters for data prepared for SEDAR 76 recreational catch data:

- Species: Black Sea Bass
- Year Range: 1981 - 2021
- Geographic Range: South Atlantic states from eastern Florida to Cape Hatteras (NC).
- Fishing Modes: Charter, Private, Shore

- MRIP Survey Methodology: Fully calibrated estimates that take into account the change in the Fishing Effort Survey (FES), the redesigned Access Point Angler Intercept Survey (APAIS), and the For Hire Survey (FHS)
- 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 8-12). For SEDAR 76 black sea bass, this includes any weights heavier than 9.933 pounds.

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 (>= 0) that complicates identification of low catch estimates.

- 2014 discard estimate: 15,435,070 fish
  - Strata: South Carolina, private, wave 6, and ocean greater than 3 miles
  - Intercept Records: a total of 7 angler trips that resulted in a discard estimate of 1,579,928 fish. Note that these 7 trips constitute 3 fishing parties.
    - One party composed of a single angler trip that harvested 1 Black Sea Bass (seen by interviewer)
    - One party composed of three angler trips:
      - One trip that harvested 6 Black Sea Bass (seen by interviewer) and released 10 live Black Sea Bass
      - Two trips that released 10 live Black Sea Bass
    - One party composed of three angler trips:
      - One trip that harvested 11 Black Sea Bass (seen by interviewer) and released 100 live Black Sea Bass
      - Two trips that released 100 live Black Sea Bass

Tables

Table 1. Annual landings (AB1) and discards (B2) of Black Sea Bass in numbers of fish by state and year (MRIP). NC only includes those areas south of Cape Hatteras.

Table 2. Annual landings (AB1) and discards (B2) of Black Sea Bass in numbers of fish by mode and year (MRIP).

Table 3. Black Sea Bass 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 dockside samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Black Sea Bass.

Table 4. Black Sea Bass 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 dockside samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Black Sea Bass.

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

Table 6. Estimated landings of Black Sea Bass 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 2019b). NC only includes those areas south of Cape Hatteras.

Table 7. Black Sea Bass landings in pounds whole weight (LBS) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode (MRIP).

Table 8. Summary of length measurements (millimeters fork length) from MRIP-intercepted Black Sea Bass by state and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths. NC only includes those areas south of Cape Hatteras.

Table 9. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by state and year. Summaries include the number of fish weighed by MRIP and, in parentheses, the number of angler trips from which those fish

were weighed (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish weights. NC only includes those areas south of Cape Hatteras.

Table 10. Summary of length measurements (millimeters fork length) from MRIP-intercepted Black Sea Bass by mode and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.

Table 11. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by mode and year. Summaries include the number of fish weighed by MRIP and, in parentheses, the number of angler trips from which those fish were weighed (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish weights.

Table 12. Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by year. Summaries include the number of fish for which size information was collected by MRIP and, in parentheses, the number of angler trips from which those fish were sampled (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths and weights.

Table 13. Estimated average weights of landed Black Sea Bass in pounds whole weight (WGT) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode (MRIP). Average weight estimates are calculated from annual estimates (by-mode) of landings-in-weight (Table 7) divided by estimates of landings-in-number(Table 2). Sample size (N) is provided as the total number of angler trips and, in parentheses, number of fish from which weight information was collected.

Table 14. Resolution of landings-in-weight estimates (pounds whole weight) for South Atlantic Black Sea Bass by year and hierarchy level (MRIP), defined by **s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, **w**ave, and **a**rea. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019b). 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 and angler trips from which weight information was collected (N) 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 **s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, and **w**ave (i.e., weight observations collapsed across areas).

Table 15. Recreational Fishing Effort (in angler trips) for South Atlantic anglers by state and year (MRIP). These effort estimates depict all (general) recreational fishing activity in the South Atlantic and are not specific to Black Sea Bass. NC only includes those areas south of Cape Hatteras.

Table 16. Recreational Fishing Effort (in angler trips) for South Atlantic anglers by mode and year (MRIP). These effort estimates depict all (general) recreational fishing activity in the South Atlantic and are not specific to Black Sea Bass.

Figures

Figure 1. Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Black Sea Bass 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 (2019a).

Figure 2. MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Black Sea Bass in the South Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include northern North Carolina as that domain is not separable from those used by the MRIP online comparison tool for the South Atlantic (NMFS).

Figure 3. Comparison of total general recreational landings (AB1) and discard estimates (B2) for South Atlantic black sea bass between SEDAR 76 and SEDAR 56, the terminal years of which are 2021 and 2016 respectively. Differences in catch estimates, which are in thousands of fish, are largely a function of changes in the MRIP survey (i.e., FES in 2018).

Figure 4. Annual Black Sea Bass landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2021 (MRIP). NC only includes those areas south of Cape Hatteras.

Figure 4a. Percent of Black Sea Bass landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP). NC only includes those areas south of Cape Hatteras.

Figure 5. Annual Black Sea Bass landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP).

Figure 5a. Percent of Black Sea Bass landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP).

Figure 6. Estimates of annual landings for Black Sea Bass in the South Atlantic (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 2019b).

Figure 7. Annual landings estimates of South Atlantic Black Sea Bass in thousands of pounds whole weight by hierarchy level (MRIP), defined by **s**pecies, **r**egion, **y**ear, **s**tate,

mode, **w**ave, and **a**rea. 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 **s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, and **w**ave (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 8. COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic black sea bass. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2021), in raw 2020 APAIS data, and in 2020 imputations. Refer to Cody (2021) for more information on COVID data gaps in MRIP.

Appendices

Appendix A. Additional Details of Survey Data and SEFSC Estimation

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Table 1. *Annual landings (AB1) and discards (B2) of Black Sea Bass in numbers of fish by state and year (MRIP). NC only includes those areas south of Cape Hatteras.*

	FLE		GA		SC		NC		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	748,144	503,592	60,122	67,140	2,048,586	570,248	1,411,211	1,658,210	4,268,063	2,799,189
1982	2,363,342	1,511,024	723,776	355,834	566,155	215,017	448,101	34,684	4,101,374	2,116,559
1983	539,417	539,532	12,327	22,261	373,103	200,003	653,911	46,941	1,578,757	808,738
1984	2,345,602	1,091,280	122,555	157,982	383,036	270,509	718,895	228,521	3,570,089	1,748,292
1985	1,303,222	938,889	276,014	84,104	734,347	482,113	1,085,530	489,041	3,399,114	1,994,148
1986	679,744	1,619,440	136,243	160,238	846,921	533,782	537,870	277,567	2,200,779	2,591,027
1987	482,478	635,471	325,477	106,434	393,356	672,576	605,122	309,432	1,806,434	1,723,912
1988	485,874	754,235	45,586	58,637	184,595	381,898	526,458	470,974	1,242,512	1,665,745
1989	726,005	1,002,537	92,497	76,764	327,697	477,986	684,741	316,731	1,830,941	1,874,018
1990	266,924	592,227	90,032	227,048	96,281	287,035	538,900	144,622	992,137	1,250,932
1991	432,953	865,193	39,310	108,559	380,968	32,761	348,265	624,285	1,201,496	1,630,799
1992	300,504	807,698	137,319	109,578	391,523	107,214	482,745	393,867	1,312,091	1,418,359
1993	349,408	739,600	88,130	109,884	108,051	174,179	367,320	535,250	912,909	1,558,912
1994	619,358	1,209,853	220,474	153,248	89,860	260,046	312,835	873,390	1,242,526	2,496,537
1995	130,639	350,672	76,373	95,374	253,707	362,127	200,814	504,541	661,532	1,312,713
1996	556,347	950,306	166,370	129,543	174,763	164,590	211,938	333,962	1,109,418	1,578,402
1997	261,887	707,808	195,800	6,596	163,106	617,660	238,724	689,408	859,517	2,021,473
1998	187,278	415,184	104,529	30,259	134,940	260,991	208,320	963,802	635,068	1,670,236
1999	334,956	1,921,447	20,761	24,121	92,515	334,124	70,340	936,098	518,572	3,215,790
2000	304,850	1,804,464	108,151	458,578	183,952	785,705	313,725	1,469,456	910,679	4,518,202
2001	495,455	1,997,681	305,714	511,049	179,158	485,486	382,679	1,331,481	1,363,006	4,325,698
2002	366,118	1,693,644	75,578	231,155	191,492	553,412	161,638	761,357	794,825	3,239,568
2003	292,101	1,446,193	169,017	424,672	70,481	486,518	333,353	910,381	864,951	3,267,764
2004	731,334	2,098,864	138,719	398,635	763,316	1,689,051	545,130	1,818,299	2,178,498	6,004,849
2005	841,888	1,742,879	189,201	564,346	94,790	894,223	345,023	1,922,145	1,470,902	5,123,593
2006	766,156	2,398,750	137,321	457,815	229,775	1,065,875	167,181	1,773,668	1,300,433	5,696,108
2007	498,889	2,484,379	54,402	545,819	192,885	1,361,226	135,450	1,342,462	881,627	5,733,885
2008	407,689	2,057,869	231,577	1,544,543	156,176	1,608,330	78,461	648,751	873,903	5,859,493
2009	441,339	2,769,252	41,362	307,087	38,149	912,743	148,630	1,137,992	669,480	5,127,075
2010	576,864	3,062,263	37,595	513,128	530,596	1,237,926	167,296	2,012,765	1,312,350	6,826,082

	FLE		GA		SC		NC		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2011	551,826	4,735,772	97,551	525,954	104,179	2,365,766	106,685	2,303,661	860,241	9,931,153
2012	372,976	5,370,681	53,106	424,856	126,660	1,212,114	130,498	4,236,616	683,239	11,244,268
2013	252,930	2,370,041	233,735	826,412	52,612	1,021,858	73,563	2,894,946	612,840	7,113,257
2014	364,896	4,313,658	166,605	1,924,665	248,740	4,286,246	331,826	4,910,502	1,112,067	15,435,070
2015	195,926	3,104,350	123,156	1,087,203	88,377	2,078,901	316,698	4,890,192	724,158	11,160,647
2016	283,203	2,029,240	19,379	313,556	56,290	2,281,759	193,324	5,418,386	552,197	10,042,942
2017	80,056	1,388,000	25,502	681,445	197,282	3,265,622	293,247	6,044,141	596,087	11,379,208
2018	123,301	1,532,307	78,795	849,110	62,853	1,361,654	79,392	2,127,196	344,342	5,870,268
2019	144,562	1,665,845	44,648	1,181,069	76,019	2,246,856	145,731	2,643,861	410,960	7,737,630
2020	44,448	1,590,567	45,380	891,461	48,509	1,157,343	88,621	2,334,745	226,958	5,974,116
2021	47,074	566,497	120,827	1,027,869	56,849	2,039,807	46,441	1,919,910	271,190	5,554,083

Table 2. *Annual landings (AB1) and discards (B2) of Black Sea Bass in numbers of fish by mode and year (MRIP).*

	Cbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	1,353,756	431,502	1,080,266	1,635,153	1,834,041	732,534	4,268,063	2,799,189
1982	258,487	32,016	3,658,093	1,531,864	184,794	552,679	4,101,374	2,116,559
1983	429,177	99,239	841,721	234,886	307,859	474,613	1,578,757	808,738
1984	545,817	158,106	2,844,165	1,068,001	180,107	522,185	3,570,089	1,748,292
1985	651,144	117,398	2,389,248	1,288,328	358,722	588,421	3,399,114	1,994,148
1986	289,831	225,417	1,834,519	1,235,725	76,429	1,129,885	2,200,779	2,591,027
1987	191,971	23,774	1,531,628	1,140,426	82,834	559,712	1,806,434	1,723,912
1988	284,811	123,894	766,682	949,486	191,018	592,366	1,242,512	1,665,745
1989	405,701	8,709	1,335,575	1,507,585	89,665	357,725	1,830,941	1,874,018
1990	173,861	3,035	649,114	1,068,805	169,162	179,092	992,137	1,250,932
1991	150,613	35,106	947,304	1,438,224	103,578	157,469	1,201,496	1,630,799
1992	272,748	50,603	1,026,972	1,284,350	12,371	83,406	1,312,091	1,418,359
1993	172,170	21,319	669,460	1,383,961	71,279	153,633	912,909	1,558,912
1994	169,623	55,303	1,017,078	2,129,205	55,825	312,029	1,242,526	2,496,537
1995	155,343	69,434	496,635	1,181,888	9,553	61,392	661,532	1,312,713
1996	131,193	61,259	951,212	1,279,824	27,014	237,319	1,109,418	1,578,402
1997	165,644	33,520	666,106	1,713,439	27,766	274,514	859,517	2,021,473
1998	93,822	12,782	490,757	1,408,792	50,489	248,663	635,068	1,670,236
1999	59,805	38,831	429,384	2,187,277	29,383	989,683	518,572	3,215,790
2000	34,035	43,217	849,429	3,866,356	27,214	608,629	910,679	4,518,202
2001	118,231	137,099	1,177,350	3,716,064	67,425	472,534	1,363,006	4,325,698
2002	84,145	54,788	661,902	2,661,321	48,778	523,460	794,825	3,239,568
2003	173,377	186,251	650,615	2,564,155	40,959	517,358	864,951	3,267,764
2004	165,075	111,520	2,004,541	5,276,580	8,883	616,749	2,178,498	6,004,849
2005	193,975	149,944	1,261,680	4,214,325	15,247	759,324	1,470,902	5,123,593
2006	98,558	64,617	1,197,940	5,142,314	3,935	489,177	1,300,433	5,696,108
2007	66,290	154,046	773,783	5,155,974	41,554	423,866	881,627	5,733,885
2008	34,422	89,728	831,458	5,176,550	8,022	593,215	873,903	5,859,493
2009	58,232	173,188	595,904	4,418,474	15,345	535,413	669,480	5,127,075
2010	65,755	145,120	1,208,706	5,925,418	37,890	755,543	1,312,350	6,826,082
2011	76,811	173,381	778,577	8,237,807	4,853	1,519,965	860,241	9,931,153
2012	43,770	317,251	629,782	9,113,795	9,687	1,813,222	683,239	11,244,268
2013	23,796	79,810	584,137	6,570,996	4,908	462,451	612,840	7,113,257
2014	103,962	759,090	980,092	13,121,031	28,013	1,554,949	1,112,067	15,435,070
2015	58,291	456,176	665,866	9,389,880	0	1,314,592	724,158	11,160,647
2016	19,696	204,409	532,501	8,879,953	0	958,580	552,197	10,042,942
2017	54,782	308,362	532,731	9,780,653	8,574	1,290,193	596,087	11,379,208
2018	19,546	126,220	317,448	5,207,441	7,348	536,606	344,342	5,870,268
2019	36,770	345,766	374,190	6,508,780	0	883,084	410,960	7,737,630
2020	13,540	118,466	186,722	5,346,126	26,696	509,524	226,958	5,974,116
2021	20,763	178,636	196,085	4,550,826	54,343	824,620	271,190	5,554,083

Table 3. *Black Sea Bass 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 dockside samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Black Sea Bass.*

	Cbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	1,353,755	0.45	44 (27)	406 (127)	1,080,265	0.32	151 (27)	1,196 (42)	1,834,040	0.45	277 (12)	1,660 (19)
1982	258,487	0.61	39 (12)	379 (53)	3,658,093	0.30	343 (60)	3,097 (118)	184,793	0.38	527 (12)	4,066 (14)
1983	429,176	0.27	132 (43)	1,458 (204)	841,721	0.29	223 (22)	1,939 (35)	307,859	0.62	488 (12)	3,843 (17)
1984	545,817	0.29	173 (54)	2,029 (303)	2,844,164	0.40	227 (37)	2,439 (67)	180,106	0.31	434 (16)	4,134 (19)
1985	651,143	0.47	130 (35)	1,310 (142)	2,389,248	0.26	481 (73)	3,819 (121)	358,721	0.43	683 (23)	4,806 (32)
1986	289,830	0.77	185 (27)	1,597 (82)	1,834,519	0.23	718 (77)	6,555 (128)	76,428	0.61	325 (5)	2,122 (7)
1987	191,971	0.31	286 (49)	2,123 (81)	1,531,628	0.19	1,041 (137)	10,186 (209)	82,834	0.47	501 (13)	3,367 (16)
1988	284,811	0.31	313 (71)	2,264 (111)	766,682	0.20	1,061 (125)	9,001 (182)	191,018	0.69	616 (6)	4,433 (6)
1989	405,701	0.36	325 (69)	2,479 (121)	1,335,574	0.16	969 (177)	9,034 (276)	89,664	0.49	549 (16)	4,822 (18)
1990	173,861	0.35	235 (60)	2,125 (90)	649,114	0.26	780 (100)	8,438 (138)	169,161	0.76	363 (5)	3,407 (8)
1991	150,613	0.30	259 (33)	1,998 (53)	947,304	0.31	706 (91)	8,202 (137)	103,577	0.36	624 (16)	7,009 (21)
1992	272,748	0.18	393 (78)	3,120 (156)	1,026,972	0.22	1,060 (118)	11,859 (167)	12,370	0.40	778 (7)	7,866 (7)
1993	172,169	0.23	234 (40)	1,850 (69)	669,460	0.23	850 (75)	10,129 (115)	71,278	0.53	1,012 (7)	10,841 (8)
1994	169,623	0.24	270 (61)	2,262 (88)	1,017,078	0.22	1,074 (99)	12,188 (137)	55,824	0.51	1,123 (12)	12,248 (13)
1995	155,342	0.29	269 (45)	2,096 (66)	496,635	0.20	1,147 (84)	12,592 (110)	9,553	0.68	1,190 (3)	12,176 (3)
1996	131,192	0.23	330 (58)	2,376 (81)	951,212	0.28	1,206 (91)	12,838 (117)	27,013	0.54	897 (6)	8,591 (6)
1997	165,644	0.31	321 (43)	2,351 (51)	666,106	0.21	1,200 (110)	13,216 (142)	27,766	0.60	827 (4)	8,235 (4)
1998	93,821	0.33	368 (59)	2,662 (87)	490,757	0.21	1,164 (69)	13,663 (94)	50,488	0.59	773 (7)	8,320 (7)
1999	59,804	0.23	448 (45)	2,469 (66)	429,384	0.19	1,319 (76)	15,074 (122)	29,383	0.39	953 (8)	9,450 (8)
2000	34,035	0.25	475 (42)	3,047 (86)	849,429	0.18	1,260 (98)	15,515 (120)	27,214	0.51	828 (7)	7,657 (7)
2001	118,230	0.22	516 (61)	3,678 (100)	1,177,350	0.17	1,434 (120)	18,171 (175)	67,424	0.56	878 (4)	8,556 (7)
2002	84,144	0.22	547 (51)	4,125 (60)	661,902	0.17	1,311 (90)	17,235 (110)	48,777	0.75	922 (5)	10,049 (5)
2003	173,377	0.21	507 (66)	3,712 (108)	650,615	0.16	1,256 (88)	15,881 (119)	40,958	0.61	948 (3)	9,334 (3)
2004	165,075	0.17	384 (87)	2,747 (145)	2,004,540	0.24	1,146 (118)	13,646 (162)	8,882	1.00	747 (1)	7,153 (1)
2005	193,974	0.38	361 (67)	3,001 (121)	1,261,680	0.24	1,119 (103)	13,654 (150)	15,247	0.59	710 (3)	7,349 (3)
2006	98,558	0.22	343 (73)	2,695 (122)	1,197,939	0.21	1,416 (113)	17,634 (150)	3,935	1.00	664 (1)	6,917 (1)
2007	66,290	0.31	321 (58)	2,635 (66)	773,782	0.19	1,241 (98)	16,317 (133)	41,553	0.62	763 (4)	7,891 (4)
2008	34,421	0.26	373 (54)	2,414 (89)	831,458	0.20	1,146 (62)	15,255 (87)	8,022	0.75	777 (2)	7,884 (2)
2009	58,231	0.30	345 (59)	2,127 (85)	595,903	0.20	1,201 (71)	14,806 (96)	15,344	0.74	751 (2)	7,378 (2)
2010	65,755	0.20	399 (85)	2,736 (127)	1,208,705	0.35	1,609 (98)	18,275 (147)	37,889	0.54	964 (5)	8,891 (5)
2011	76,811	0.37	340 (37)	2,398 (44)	778,576	0.28	1,532 (61)	16,345 (93)	4,852	0.70	1,037 (3)	9,323 (4)

	Cbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2012	43,770	0.26	368 (34)	2,654 (58)	629,782	0.21	1,682 (93)	18,596 (176)	9,686	0.49	1,124 (5)	10,029 (5)
2013	23,795	0.35	241 (38)	1,435 (47)	584,136	0.38	1,278 (75)	12,002 (110)	4,907	0.62	743 (4)	7,220 (4)
2014	103,961	0.47	490 (68)	3,383 (89)	980,091	0.21	1,222 (86)	12,974 (110)	28,013	0.51	678 (8)	7,322 (8)
2015	58,291	0.26	533 (61)	3,314 (74)	665,866	0.25	1,274 (77)	13,053 (113)	0	0.00	707 (0)	6,835 (0)
2016	19,695	0.29	569 (46)	3,275 (83)	532,501	0.32	1,292 (69)	12,365 (99)	0	0.00	820 (0)	6,606 (0)
2017	54,782	0.38	487 (32)	2,591 (46)	532,731	0.32	1,307 (63)	13,119 (88)	8,573	0.62	807 (4)	6,617 (4)
2018	19,545	0.31	561 (51)	3,640 (64)	317,448	0.26	1,224 (45)	12,051 (65)	7,347	0.91	743 (2)	6,585 (2)
2019	36,769	0.48	559 (45)	3,384 (62)	374,189	0.28	1,228 (48)	11,679 (63)	0	0.00	785 (0)	6,504 (0)
2020	13,539	0.24	685 (65)	4,203 (80)	186,722	0.22	1,611 (51)	14,842 (89)	26,695	0.69	952 (3)	7,874 (3)
2021	20,762	0.25	794 (65)	5,268 (73)	196,084	0.33	1,860 (48)	16,704 (68)	54,342	0.75	1,169 (4)	8,880 (4)

Table 4. *Black Sea Bass 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 dockside samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Black Sea Bass.*

	Cbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	431,501	0.48	44 (18)	406 (96)	1,635,153	0.67	151 (20)	1,196 (40)	732,533	0.45	277 (14)	1,660 (18)
1982	32,015	0.56	39 (6)	379 (19)	1,531,863	0.35	343 (35)	3,097 (51)	552,679	0.47	527 (14)	4,066 (16)
1983	99,238	0.28	132 (27)	1,458 (133)	234,886	0.39	223 (10)	1,939 (19)	474,612	0.49	488 (16)	3,843 (26)
1984	158,105	0.36	173 (32)	2,029 (191)	1,068,001	0.45	227 (27)	2,439 (62)	522,184	0.27	434 (27)	4,134 (47)
1985	117,398	0.53	130 (14)	1,310 (47)	1,288,328	0.24	481 (60)	3,819 (121)	588,421	0.30	683 (26)	4,806 (43)
1986	225,417	0.98	185 (7)	1,597 (15)	1,235,725	0.27	718 (79)	6,555 (159)	1,129,884	0.86	325 (13)	2,122 (22)
1987	23,773	0.36	286 (22)	2,123 (52)	1,140,426	0.23	1,041 (103)	10,186 (231)	559,712	0.50	501 (12)	3,367 (22)
1988	123,893	0.48	313 (23)	2,264 (107)	949,485	0.18	1,061 (102)	9,001 (223)	592,365	0.70	616 (17)	4,433 (18)
1989	8,708	0.41	325 (19)	2,479 (78)	1,507,584	0.16	969 (141)	9,034 (297)	357,724	0.75	549 (16)	4,822 (21)
1990	3,034	0.86	235 (8)	2,125 (24)	1,068,805	0.23	780 (85)	8,438 (168)	179,091	0.34	363 (14)	3,407 (19)

	Cbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1991	35,105	0.29	259 (21)	1,998 (42)	1,438,224	0.28	706 (103)	8,202 (216)	157,468	0.39	624 (22)	7,009 (27)
1992	50,602	0.25	393 (32)	3,120 (83)	1,284,350	0.21	1,060 (108)	11,859 (267)	83,405	0.48	778 (16)	7,866 (18)
1993	21,319	0.52	234 (10)	1,850 (34)	1,383,960	0.25	850 (95)	10,129 (204)	153,632	0.33	1,012 (20)	10,841 (25)
1994	55,302	0.34	270 (31)	2,262 (125)	2,129,205	0.19	1,074 (179)	12,188 (448)	312,029	0.24	1,123 (53)	12,248 (74)
1995	69,433	0.39	269 (29)	2,096 (106)	1,181,887	0.16	1,147 (165)	12,592 (362)	61,391	0.28	1,190 (21)	12,176 (26)
1996	61,258	0.28	330 (44)	2,376 (152)	1,279,823	0.28	1,206 (139)	12,838 (280)	237,319	0.28	897 (27)	8,591 (41)
1997	33,520	0.35	321 (20)	2,351 (58)	1,713,438	0.17	1,200 (168)	13,216 (437)	274,513	0.27	827 (41)	8,235 (57)
1998	12,781	0.42	368 (13)	2,662 (40)	1,408,791	0.16	1,164 (164)	13,663 (390)	248,662	0.30	773 (39)	8,320 (57)
1999	38,831	0.23	448 (34)	2,469 (108)	2,187,276	0.13	1,319 (179)	15,074 (468)	989,682	0.41	953 (34)	9,450 (54)
2000	43,217	0.30	475 (49)	3,047 (159)	3,866,355	0.13	1,260 (229)	15,515 (545)	608,629	0.26	828 (36)	7,657 (47)
2001	137,099	0.25	516 (43)	3,678 (134)	3,716,064	0.12	1,434 (259)	18,171 (664)	472,533	0.31	878 (31)	8,556 (46)
2002	54,787	0.29	547 (34)	4,125 (84)	2,661,320	0.12	1,311 (216)	17,235 (510)	523,459	0.30	922 (35)	10,049 (53)
2003	186,251	0.24	507 (48)	3,712 (206)	2,564,155	0.13	1,256 (191)	15,881 (440)	517,357	0.31	948 (34)	9,334 (53)
2004	111,519	0.20	384 (64)	2,747 (246)	5,276,580	0.14	1,146 (240)	13,646 (545)	616,748	0.30	747 (31)	7,153 (52)
2005	149,943	0.24	361 (65)	3,001 (289)	4,214,325	0.12	1,119 (228)	13,654 (549)	759,323	0.25	710 (47)	7,349 (60)
2006	64,617	0.22	343 (64)	2,695 (294)	5,142,313	0.11	1,416 (292)	17,634 (771)	489,177	0.30	664 (25)	6,917 (44)
2007	154,046	0.28	321 (59)	2,635 (238)	5,155,973	0.13	1,241 (245)	16,317 (654)	423,865	0.28	763 (27)	7,891 (42)
2008	89,727	0.25	373 (68)	2,414 (240)	5,176,550	0.15	1,146 (221)	15,255 (571)	593,214	0.27	777 (37)	7,884 (53)
2009	173,188	0.42	345 (51)	2,127 (178)	4,418,473	0.13	1,201 (236)	14,806 (630)	535,412	0.24	751 (31)	7,378 (44)
2010	145,120	0.22	399 (94)	2,736 (359)	5,925,417	0.13	1,609 (381)	18,275 (1,030)	755,543	0.25	964 (54)	8,891 (80)
2011	173,380	0.23	340 (79)	2,398 (277)	8,237,807	0.11	1,532 (384)	16,345 (1,135)	1,519,964	0.22	1,037 (90)	9,323 (160)
2012	317,250	0.22	368 (86)	2,654 (392)	9,113,795	0.13	1,682 (544)	18,596 (1,850)	1,813,222	0.52	1,124 (110)	10,029 (172)
2013	79,810	0.33	241 (44)	1,435 (151)	6,570,996	0.12	1,278 (336)	12,002 (1,103)	462,450	0.24	743 (56)	7,220 (90)
2014	759,090	0.34	490 (110)	3,383 (429)	13,121,030	0.15	1,222 (350)	12,974 (1,214)	1,554,949	0.27	678 (89)	7,322 (159)
2015	456,175	0.29	533 (91)	3,314 (334)	9,389,879	0.15	1,274 (325)	13,053 (1,055)	1,314,591	0.23	707 (91)	6,835 (157)
2016	204,408	0.30	569 (92)	3,275 (347)	8,879,952	0.12	1,292 (337)	12,365 (1,319)	958,579	0.26	820 (88)	6,606 (144)
2017	308,362	0.30	487 (63)	2,591 (207)	9,780,652	0.11	1,307 (373)	13,119 (1,485)	1,290,192	0.31	807 (86)	6,617 (161)
2018	126,220	0.21	561 (89)	3,640 (368)	5,207,441	0.15	1,224 (257)	12,051 (983)	536,606	0.20	743 (83)	6,585 (149)
2019	345,765	0.32	559 (86)	3,384 (341)	6,508,780	0.15	1,228 (284)	11,679 (1,074)	883,084	0.22	785 (83)	6,504 (140)
2020	118,465	0.35	685 (108)	4,203 (369)	5,346,126	0.14	1,611 (395)	14,842 (1,443)	509,524	0.23	952 (73)	7,874 (124)
2021	178,636	0.26	794 (106)	5,268 (320)	4,550,826	0.13	1,860 (342)	16,704 (1,180)	824,620	0.23	1,169 (85)	8,880 (125)

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

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	4,268,062	0.26	472 (66)	3,262 (188)	2,799,189	0.41	472 (52)	3,262 (154)
1982	4,101,374	0.27	909 (84)	7,542 (185)	2,116,558	0.28	909 (55)	7,542 (86)
1983	1,578,757	0.21	843 (77)	7,240 (256)	808,737	0.31	843 (53)	7,240 (178)
1984	3,570,088	0.32	834 (107)	8,602 (389)	1,748,291	0.28	834 (86)	8,602 (300)
1985	3,399,113	0.21	1,294 (131)	9,935 (295)	1,994,147	0.17	1,294 (100)	9,935 (211)
1986	2,200,778	0.21	1,228 (109)	10,274 (217)	2,591,027	0.41	1,228 (99)	10,274 (196)
1987	1,806,433	0.16	1,828 (199)	15,676 (306)	1,723,912	0.22	1,828 (137)	15,676 (305)
1988	1,242,511	0.17	1,990 (202)	15,698 (299)	1,665,745	0.27	1,990 (142)	15,698 (348)
1989	1,830,940	0.14	1,843 (262)	16,335 (415)	1,874,018	0.19	1,843 (176)	16,335 (396)
1990	992,137	0.22	1,378 (165)	13,970 (236)	1,250,931	0.20	1,378 (107)	13,970 (211)
1991	1,201,495	0.25	1,589 (140)	17,209 (211)	1,630,798	0.24	1,589 (146)	17,209 (285)
1992	1,312,091	0.17	2,231 (203)	22,845 (330)	1,418,358	0.19	2,231 (156)	22,845 (368)
1993	912,908	0.17	2,096 (122)	22,820 (192)	1,558,912	0.22	2,096 (125)	22,820 (263)
1994	1,242,526	0.18	2,467 (172)	26,698 (238)	2,496,537	0.17	2,467 (263)	26,698 (647)
1995	661,531	0.17	2,606 (132)	26,864 (179)	1,312,713	0.15	2,606 (215)	26,864 (494)
1996	1,109,418	0.24	2,433 (155)	23,805 (204)	1,578,402	0.22	2,433 (210)	23,805 (473)
1997	859,516	0.17	2,348 (157)	23,802 (197)	2,021,472	0.15	2,348 (229)	23,802 (552)
1998	635,067	0.17	2,305 (135)	24,645 (188)	1,670,235	0.13	2,305 (216)	24,645 (487)
1999	518,572	0.16	2,720 (129)	26,993 (196)	3,215,790	0.15	2,720 (247)	26,993 (630)
2000	910,678	0.16	2,563 (147)	26,219 (213)	4,518,202	0.11	2,563 (314)	26,219 (751)
2001	1,363,005	0.15	2,828 (185)	30,405 (282)	4,325,697	0.11	2,828 (333)	30,405 (844)
2002	794,825	0.15	2,780 (146)	31,409 (175)	3,239,568	0.11	2,780 (285)	31,409 (647)
2003	864,951	0.13	2,711 (157)	28,927 (230)	3,267,764	0.11	2,711 (273)	28,927 (699)
2004	2,178,498	0.22	2,277 (206)	23,546 (308)	6,004,848	0.13	2,277 (335)	23,546 (843)
2005	1,470,902	0.20	2,190 (173)	24,004 (274)	5,123,592	0.10	2,190 (340)	24,004 (898)
2006	1,300,433	0.19	2,423 (187)	27,246 (273)	5,696,108	0.10	2,423 (381)	27,246 (1,109)
2007	881,627	0.16	2,325 (160)	26,843 (203)	5,733,885	0.11	2,325 (331)	26,843 (934)
2008	873,902	0.19	2,296 (118)	25,553 (178)	5,859,492	0.13	2,296 (326)	25,553 (864)
2009	669,480	0.17	2,297 (132)	24,311 (183)	5,127,074	0.11	2,297 (318)	24,311 (852)
2010	1,312,350	0.31	2,972 (188)	29,902 (279)	6,826,081	0.11	2,972 (529)	29,902 (1,469)
2011	860,240	0.25	2,909 (101)	28,066 (141)	9,931,152	0.09	2,909 (553)	28,066 (1,572)
2012	683,239	0.19	3,174 (132)	31,279 (239)	11,244,268	0.13	3,174 (740)	31,279 (2,414)
2013	612,840	0.36	2,262 (117)	20,657 (161)	7,113,257	0.10	2,262 (436)	20,657 (1,344)
2014	1,112,066	0.19	2,390 (162)	23,679 (207)	15,435,070	0.13	2,390 (549)	23,679 (1,802)
2015	724,157	0.23	2,514 (138)	23,202 (187)	11,160,647	0.12	2,514 (507)	23,202 (1,546)
2016	552,197	0.30	2,681 (115)	22,246 (182)	10,042,941	0.11	2,681 (517)	22,246 (1,810)
2017	596,087	0.28	2,601 (99)	22,327 (138)	11,379,207	0.10	2,601 (522)	22,327 (1,853)
2018	344,341	0.23	2,528 (98)	22,276 (131)	5,870,267	0.13	2,528 (429)	22,276 (1,500)
2019	410,959	0.26	2,572 (93)	21,567 (125)	7,737,630	0.13	2,572 (453)	21,567 (1,555)
2020	226,957	0.20	3,248 (119)	26,919 (172)	5,974,116	0.13	3,248 (576)	26,919 (1,936)

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
2021	271,190	0.28	3,823 (117)	30,852 (145)	5,554,082	0.11	3,823 (533)	30,852 (1,625)

Table 6. *Estimated landings of Black Sea Bass 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 2019b). NC only includes those areas south of Cape Hatteras.*

Year	FLE	GA	SC	NC	Total
1981	710,971	41,008	698,985	632,698	2,083,662
1982	2,124,508	697,786	324,972	265,633	3,412,899
1983	307,594	12,880	154,971	253,369	728,813
1984	2,426,116	62,149	190,751	528,663	3,207,680
1985	980,708	228,736	320,706	712,165	2,242,316
1986	322,230	114,884	591,708	358,247	1,387,070
1987	430,959	178,975	198,495	486,527	1,294,955
1988	400,393	22,893	118,542	439,296	981,124
1989	734,550	52,176	269,282	534,478	1,590,486
1990	243,051	34,491	48,645	473,257	799,444
1991	330,827	27,247	400,364	273,102	1,031,540
1992	213,293	126,637	231,624	401,831	973,385
1993	270,997	158,761	88,343	283,667	801,769
1994	454,827	216,627	113,446	257,137	1,042,036
1995	113,901	67,869	262,101	157,764	601,636
1996	632,437	170,311	106,957	201,308	1,111,013
1997	256,756	201,489	128,105	236,070	822,420
1998	169,198	103,019	105,080	166,056	543,354
1999	321,091	43,618	159,085	69,449	593,243
2000	269,583	102,140	152,594	371,293	895,610
2001	463,717	312,013	215,006	452,036	1,442,772
2002	345,108	49,172	170,376	244,947	809,604
2003	273,640	188,266	51,672	346,021	859,599
2004	751,687	136,567	691,702	520,058	2,100,013
2005	838,083	137,618	86,140	439,480	1,501,321
2006	666,265	104,083	241,263	161,185	1,172,795
2007	430,944	49,707	199,667	304,588	984,906
2008	386,212	217,112	202,660	106,866	912,851
2009	476,953	42,175	44,709	165,544	729,380
2010	624,073	36,811	602,394	204,225	1,467,502
2011	645,315	92,365	142,121	155,930	1,035,731
2012	343,208	58,648	194,020	204,003	799,878
2013	290,113	294,431	68,876	106,323	759,744
2014	516,241	234,285	320,162	642,206	1,712,894
2015	244,364	170,632	125,924	441,570	982,490
2016	389,560	21,644	73,998	306,329	791,531
2017	113,817	31,662	370,937	502,107	1,018,522
2018	142,830	107,344	70,733	118,564	439,471
2019	169,042	51,161	112,238	198,098	530,539
2020	53,272	48,616	64,458	133,015	299,361

Year	FLE	GA	SC	NC	Total
2021	53,627	152,967	76,000	67,341	349,935

Table 7. *Black Sea Bass landings in pounds whole weight (LBS) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode (MRIP).*

	Cbt		Priv		Shore		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV
1981	608,628	0.46	822,289	0.40	652,745	0.49	2,083,662	0.35
1982	200,305	0.62	3,074,457	0.33	138,137	0.38	3,412,899	0.31
1983	211,691	0.32	377,718	0.33	139,405	0.62	728,813	0.27
1984	422,338	0.37	2,665,234	0.46	120,108	0.41	3,207,680	0.40
1985	523,915	0.52	1,590,283	0.37	128,118	0.48	2,242,316	0.35
1986	256,919	0.78	1,079,167	0.29	50,984	0.63	1,387,070	0.28
1987	217,460	0.36	1,022,258	0.33	55,237	0.48	1,294,955	0.28
1988	297,214	0.34	493,444	0.26	190,466	0.69	981,124	0.23
1989	389,379	0.39	1,138,324	0.26	62,782	0.51	1,590,486	0.24
1990	244,490	0.40	443,359	0.30	111,594	0.77	799,444	0.31
1991	174,212	0.36	748,346	0.36	108,982	0.41	1,031,540	0.32
1992	272,699	0.22	689,621	0.28	11,065	0.55	973,385	0.22
1993	225,523	0.26	492,922	0.32	83,323	0.57	801,769	0.24
1994	183,233	0.28	800,459	0.31	58,344	0.54	1,042,036	0.26
1995	218,557	0.32	375,806	0.27	7,272	0.68	601,636	0.23
1996	175,036	0.31	905,147	0.39	30,829	0.54	1,111,013	0.34
1997	194,185	0.35	602,684	0.29	25,551	0.60	822,420	0.26
1998	88,119	0.37	405,950	0.31	49,285	0.59	543,354	0.26
1999	85,358	0.49	475,469	0.24	32,415	0.39	593,243	0.37
2000	32,195	0.27	835,178	0.24	28,237	0.51	895,610	0.21
2001	138,510	0.25	1,226,666	0.20	77,596	0.62	1,442,772	0.19
2002	135,414	0.26	625,628	0.22	48,561	0.76	809,604	0.21
2003	211,715	0.23	605,991	0.23	41,892	0.61	859,599	0.18
2004	184,488	0.25	1,906,297	0.26	9,228	1.00	2,100,013	0.27
2005	299,066	0.39	1,186,372	0.28	15,883	0.59	1,501,321	0.24
2006	107,902	0.26	1,061,068	0.26	3,825	1.00	1,172,795	0.24
2007	77,801	0.33	864,965	0.23	42,140	0.65	984,906	0.20
2008	47,414	0.27	857,733	0.28	7,704	0.75	912,851	0.24
2009	69,845	0.33	643,730	0.22	15,805	0.76	729,380	0.22
2010	83,720	0.21	1,342,645	0.36	41,136	0.54	1,467,502	0.32
2011	94,715	0.38	933,649	0.29	7,367	0.71	1,035,731	0.26
2012	67,581	0.27	720,555	0.27	11,742	0.49	799,878	0.24
2013	35,744	0.35	716,554	0.40	7,446	0.66	759,744	0.38
2014	136,420	0.47	1,538,354	0.24	38,120	0.51	1,712,894	0.21
2015	75,428	0.27	907,063	0.28	0	0.00	982,490	0.25
2016	27,091	0.30	764,440	0.33	0	0.00	791,531	0.31
2017	76,512	0.39	930,346	0.34	11,664	0.62	1,018,522	0.30
2018	26,007	0.32	402,439	0.29	11,024	0.91	439,471	0.25
2019	48,488	0.49	482,051	0.29	0	0.00	530,539	0.27
2020	18,183	0.26	240,816	0.23	40,362	0.71	299,361	0.22
2021	28,298	0.27	258,331	0.34	63,305	0.75	349,935	0.30

Table 8. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Black Sea Bass by state and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths. NC only includes those areas south of Cape Hatteras.*

	FLE					GA					SC					NC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	41 (15)	170	247	48	380	29 (5)	170	232	42	330	106 (28)	120	192	42	310	130 (24)	124	193	33	300
1982	307 (57)	125	278	58	500	87 (19)	140	273	67	480	161 (43)	114	196	46	316	96 (18)	100	231	60	418
1983	99 (20)	30	268	57	400	19 (11)	140	245	111	474	48 (16)	125	215	50	307	121 (17)	140	216	49	412
1984	266 (52)	140	286	57	440	57 (23)	130	234	63	423	118 (29)	140	230	47	355	125 (22)	120	285	52	410
1985	145 (34)	105	237	70	438	290 (57)	140	271	67	490	204 (49)	120	230	58	390	157 (29)	120	243	70	415
1986	243 (85)	149	215	43	400	173 (39)	145	283	71	428	339 (75)	130	261	55	414	92 (18)	180	286	65	430
1987	130 (24)	208	277	59	450	320 (66)	149	257	56	465	377 (92)	150	239	44	450	646 (124)	138	279	80	470
1988	109 (28)	152	308	50	406	75 (17)	188	258	37	415	385 (89)	170	259	46	430	721 (165)	126	272	71	560
1989	166 (49)	140	299	57	408	136 (33)	155	246	58	402	419 (114)	140	261	68	464	936 (219)	140	271	65	558
1990	47 (12)	174	294	44	387	60 (15)	149	237	54	350	112 (30)	171	261	58	460	818 (179)	140	277	71	510
1991	129 (36)	196	301	59	490	25 (10)	170	257	71	460	139 (29)	165	306	71	450	541 (136)	130	265	61	460
1992	220 (54)	160	265	57	490	330 (71)	152	284	57	449	267 (50)	151	263	55	460	806 (155)	155	285	64	550
1993	118 (29)	161	286	45	400	103 (22)	155	350	75	510	138 (24)	170	274	61	511	569 (117)	121	276	56	468
1994	142 (52)	130	273	52	354	121 (26)	155	303	76	440	84 (21)	213	314	76	592	595 (139)	114	291	60	535
1995	54 (18)	207	283	49	416	151 (24)	130	293	58	425	162 (35)	187	309	80	520	442 (102)	150	288	69	523
1996	127 (30)	203	284	74	436	172 (30)	200	298	71	501	190 (41)	150	295	75	523	495 (103)	170	298	70	518
1997	92 (34)	234	294	49	434	109 (29)	161	279	61	430	242 (63)	151	279	57	580	319 (71)	145	284	55	511
1998	95 (28)	171	288	46	435	135 (48)	161	283	58	410	221 (42)	170	307	63	511	336 (70)	160	284	64	534
1999	305 (111)	200	303	47	431	60 (14)	212	323	114	630	188 (35)	200	319	57	455	216 (36)	171	311	65	485
2000	131 (50)	207	288	45	422	218 (38)	171	282	40	421	260 (72)	205	302	48	440	228 (53)	190	296	53	475
2001	321 (98)	204	295	43	401	179 (38)	174	312	49	438	208 (47)	240	317	50	456	537 (99)	196	311	46	480
2002	238 (83)	207	297	41	425	85 (15)	238	283	41	420	140 (28)	228	301	38	440	196 (49)	218	346	67	580
2003	270 (81)	241	302	40	441	632 (71)	209	301	44	451	107 (22)	240	282	34	425	268 (56)	217	310	52	539
2004	369 (88)	221	318	41	558	480 (70)	224	309	44	456	406 (70)	222	317	53	488	358 (80)	238	314	50	463
2005	284 (85)	233	309	47	452	663 (74)	230	295	37	467	253 (48)	209	315	52	498	264 (67)	219	321	65	522
2006	347 (84)	185	302	42	433	388 (55)	217	308	55	461	543 (77)	221	308	38	433	204 (57)	222	323	60	489
2007	258 (78)	237	298	38	406	441 (32)	180	317	41	468	290 (46)	227	314	24	405	176 (47)	287	377	60	553
2008	119 (43)	220	311	43	474	301 (40)	173	324	44	494	307 (62)	273	341	40	472	126 (33)	228	350	41	468
2009	162 (51)	229	320	32	404	387 (35)	235	332	33	449	180 (44)	278	336	39	521	303 (53)	270	345	45	611
2010	356 (63)	193	324	31	432	427 (34)	246	339	36	476	428 (84)	251	332	31	443	490 (98)	150	338	38	491
2011	229 (45)	240	325	32	416	182 (20)	265	337	40	472	86 (15)	297	347	34	514	362 (61)	196	358	46	535

	FLE					GA					SC					NC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2012	195 (56)	210	305	52	432	127 (17)	232	329	34	415	226 (48)	282	380	38	514	549 (118)	223	362	46	511
2013	167 (53)	179	329	40	430	115 (18)	210	342	46	454	89 (17)	200	340	51	429	392 (73)	189	364	39	484
2014	318 (83)	229	349	34	480	165 (29)	285	343	30	490	156 (30)	281	351	27	465	306 (65)	124	365	36	441
2015	165 (65)	264	341	28	450	146 (28)	204	340	33	490	156 (32)	310	358	25	460	245 (62)	270	361	35	502
2016	93 (38)	240	354	36	444	88 (29)	204	334	38	399	101 (36)	292	350	25	408	338 (79)	295	366	33	520
2017	72 (31)	218	358	43	500	114 (24)	210	341	33	421	69 (20)	319	371	36	465	255 (63)	255	365	42	476
2018	39 (20)	279	349	34	393	67 (22)	176	346	44	442	103 (18)	201	337	57	428	242 (55)	261	355	32	441
2019	59 (25)	298	348	25	440	130 (15)	286	348	29	411	99 (32)	275	348	27	479	205 (42)	299	360	32	509
2020	30 (12)	294	333	20	361	191 (23)	256	341	22	412	129 (33)	203	344	37	428	344 (86)	232	361	41	523
2021	39 (19)	250	337	33	408	120 (26)	142	335	52	406	104 (33)	252	351	37	475	221 (67)	271	366	35	511

Table 9. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by state and year. Summaries include the number of fish weighed by MRIP and, in parentheses, the number of angler trips from which those fish were weighed (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish weights. NC only includes those areas south of Cape Hatteras.*

	FLE					GA					SC					NC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	41 (15)	0.2	0.5	0.2	1.1	29 (5)	0.2	0.6	0.3	1.4	95 (27)	0.2	0.4	0.3	1.5	130 (24)	0.2	0.5	0.2	1.3
1982	307 (57)	0.2	0.9	0.4	2.7	87 (19)	0.2	0.8	0.5	2.8	161 (43)	0.1	0.5	0.4	1.8	96 (18)	0.2	0.6	0.5	2.5
1983	99 (20)	0.2	0.6	0.3	1.9	19 (11)	0.1	1.0	1.5	5.0	47 (16)	0.1	0.4	0.2	0.9	121 (17)	0.2	0.4	0.3	2.5
1984	266 (52)	0.1	0.9	0.5	3.1	57 (23)	0.2	0.6	0.5	2.6	118 (29)	0.1	0.4	0.3	1.6	125 (22)	0.1	0.8	0.5	2.4
1985	145 (34)	0.0	0.6	0.6	2.7	290 (57)	0.2	0.8	0.7	4.4	202 (48)	0.1	0.4	0.3	2.0	151 (29)	0.2	0.6	0.4	2.1
1986	242 (85)	0.2	0.4	0.2	1.8	171 (37)	0.2	0.8	0.5	2.9	338 (75)	0.2	0.7	0.4	2.1	92 (18)	0.2	0.9	0.7	2.9
1987	130 (24)	0.4	0.8	0.5	2.4	313 (66)	0.2	0.5	0.3	2.3	376 (92)	0.1	0.5	0.3	2.6	642 (124)	0.2	0.9	0.8	3.2
1988	52 (9)	0.4	1.0	0.4	1.6	43 (8)	0.2	0.5	0.2	0.9	273 (61)	0.2	0.7	0.4	2.6	206 (40)	0.2	0.8	0.6	3.3
1989	166 (49)	0.1	0.9	0.5	2.0	136 (33)	0.2	0.5	0.4	2.0	419 (114)	0.1	0.8	0.8	6.7	933 (219)	0.2	0.8	0.6	5.6
1990	47 (12)	0.2	0.9	0.4	2.4	41 (12)	0.2	0.4	0.2	0.7	69 (22)	0.2	0.6	0.4	2.2	817 (179)	0.2	0.9	0.8	6.1

	FLE					GA					SC					NC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1991	129 (36)	0.2	1.0	0.7	2.6	25 (10)	0.2	0.7	0.6	2.4	139 (29)	0.1	1.5	1.3	5.7	540 (135)	0.2	0.8	0.5	3.4
1992	158 (40)	0.2	0.7	0.5	3.7	329 (70)	0.2	1.0	0.6	3.3	267 (50)	0.2	0.7	0.4	2.3	806 (155)	0.2	0.9	0.7	5.4
1993	118 (29)	0.4	0.8	0.5	2.6	103 (22)	0.1	1.7	0.8	3.8	138 (24)	0.2	0.8	0.6	5.6	569 (117)	0.1	0.8	0.5	3.4
1994	142 (52)	0.2	0.7	0.4	1.8	121 (26)	0.1	1.1	0.8	2.9	84 (21)	0.2	1.3	1.1	6.8	595 (139)	0.1	0.9	0.6	4.1
1995	54 (18)	0.4	0.8	0.4	2.2	151 (24)	0.1	1.1	0.7	3.5	162 (35)	0.2	1.1	0.8	4.2	442 (102)	0.1	0.9	0.7	4.2
1996	127 (30)	0.4	1.0	0.7	3.0	172 (30)	0.3	1.2	0.8	4.2	190 (41)	0.1	1.2	1.0	6.2	495 (103)	0.2	1.0	0.7	3.4
1997	92 (34)	0.3	1.0	0.6	3.0	109 (29)	0.3	1.0	0.6	3.0	242 (63)	0.1	0.9	0.8	8.0	319 (71)	0.2	0.9	0.6	3.5
1998	95 (28)	0.4	0.9	0.5	3.3	135 (48)	0.2	0.9	0.5	2.6	221 (42)	0.2	1.1	0.7	4.7	336 (70)	0.2	1.0	0.7	4.3
1999	305 (111)	0.3	1.0	0.4	2.7	60 (14)	0.3	1.9	2.6	9.4	188 (35)	0.2	1.1	0.6	2.9	216 (36)	0.1	1.1	0.6	4.3
2000	131 (50)	0.3	0.9	0.4	2.6	218 (38)	0.2	1.0	0.7	7.3	260 (72)	0.3	1.0	0.5	3.0	228 (53)	0.1	0.9	0.5	2.9
2001	321 (98)	0.3	1.0	0.4	2.3	179 (38)	0.2	1.3	0.7	4.5	197 (44)	0.3	1.1	0.5	2.8	537 (99)	0.3	1.1	0.5	4.0
2002	238 (83)	0.4	0.9	0.4	2.1	85 (15)	0.4	0.9	0.6	3.5	140 (28)	0.4	0.9	0.6	4.6	196 (49)	0.4	1.7	1.0	4.6
2003	270 (81)	0.4	1.0	0.5	3.1	632 (71)	0.3	1.2	0.7	4.1	107 (22)	0.4	0.8	0.5	3.6	268 (56)	0.5	1.1	0.6	4.6
2004	369 (88)	0.4	1.0	0.4	4.9	480 (70)	0.4	1.0	0.4	2.9	400 (68)	0.3	1.0	0.6	3.7	358 (80)	0.4	1.0	0.5	3.2
2005	284 (85)	0.4	0.9	0.4	2.6	663 (74)	0.4	0.8	0.3	2.9	253 (48)	0.4	1.0	0.5	3.3	264 (67)	0.4	1.1	0.8	4.0
2006	347 (84)	0.3	0.9	0.3	2.0	388 (55)	0.3	1.1	0.7	3.3	533 (75)	0.4	1.0	0.4	3.0	204 (57)	0.3	1.1	0.6	4.0
2007	258 (78)	0.4	0.9	0.3	1.9	441 (32)	0.1	1.1	0.4	3.2	290 (46)	0.4	1.0	0.2	2.4	176 (47)	0.8	1.8	0.9	5.5
2008	119 (43)	0.4	1.0	0.3	2.7	301 (40)	0.2	1.2	0.4	3.3	307 (62)	0.7	1.3	0.5	3.3	126 (33)	0.3	1.4	0.5	3.4
2009	162 (51)	0.4	1.0	0.3	2.2	387 (35)	0.4	1.2	0.4	2.8	180 (44)	0.8	1.2	0.5	4.9	303 (53)	0.7	1.4	0.9	8.8
2010	356 (63)	0.3	1.0	0.3	2.6	427 (34)	0.8	1.4	0.5	3.6	428 (84)	0.8	1.2	0.3	2.8	490 (98)	0.2	1.3	0.5	3.7
2011	229 (45)	0.4	1.1	0.3	2.2	182 (20)	0.7	1.3	0.5	3.1	86 (15)	0.9	1.2	0.3	2.3	362 (61)	0.2	1.5	0.6	4.0
2012	195 (56)	0.3	1.0	0.4	2.2	127 (17)	0.4	1.1	0.4	2.8	226 (48)	1.0	1.6	0.4	4.0	549 (118)	0.4	1.6	0.7	5.5
2013	167 (53)	0.2	1.2	0.4	2.3	115 (18)	0.3	1.3	0.5	3.2	89 (17)	0.2	1.3	0.4	2.2	392 (73)	0.2	1.5	0.5	3.3
2014	318 (83)	0.4	1.3	0.4	3.5	165 (29)	0.7	1.3	0.4	3.5	156 (30)	0.8	1.3	0.3	3.2	306 (65)	0.1	1.6	0.5	3.1
2015	165 (65)	0.6	1.3	0.3	2.4	146 (28)	0.3	1.3	0.3	3.5	156 (32)	0.9	1.4	0.4	3.0	245 (62)	0.8	1.5	0.5	3.5
2016	93 (38)	0.4	1.4	0.4	2.8	88 (29)	0.3	1.1	0.3	2.4	101 (36)	0.8	1.3	0.3	2.1	338 (79)	0.9	1.6	0.5	4.0
2017	72 (31)	0.3	1.4	0.4	2.6	114 (24)	0.3	1.2	0.3	2.5	69 (20)	0.9	1.7	0.5	2.8	255 (63)	0.6	1.5	0.5	3.3
2018	39 (20)	0.7	1.2	0.2	1.8	67 (22)	0.2	1.3	0.4	2.4	103 (18)	0.2	1.2	0.5	2.5	242 (55)	0.7	1.5	0.5	3.3
2019	59 (25)	0.9	1.2	0.2	2.3	130 (15)	0.8	1.3	0.4	2.3	99 (32)	0.7	1.4	0.4	3.7	205 (42)	0.8	1.4	0.5	3.5
2020	30 (12)	0.8	1.1	0.2	1.7	191 (23)	0.6	1.1	0.2	2.1	129 (33)	0.3	1.2	0.4	2.2	344 (86)	0.7	1.6	0.6	4.9
2021	39 (19)	0.5	1.2	0.3	1.9	120 (26)	0.1	1.1	0.4	2.1	104 (33)	0.6	1.3	0.5	3.3	221 (67)	0.7	1.6	0.6	5.5

Table 10. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Black Sea Bass by mode and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.*

	Cbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	62 (11)	140	191	37	305	197 (42)	124	211	43	380	47 (19)	120	191	52	300
1982	18 (5)	190	241	34	290	615 (118)	100	252	67	500	18 (14)	120	179	53	292
1983	70 (12)	155	246	50	412	184 (35)	30	237	68	474	33 (17)	140	205	45	287
1984	209 (40)	175	270	55	440	324 (67)	120	276	59	430	33 (19)	130	191	48	350
1985	95 (16)	150	282	78	423	633 (121)	120	251	64	490	68 (32)	105	184	37	281
1986	252 (82)	180	234	67	430	582 (128)	138	265	59	428	13 (7)	130	222	62	340
1987	444 (81)	180	304	78	470	1,008 (209)	141	247	54	465	21 (16)	138	215	40	288
1988	608 (111)	180	286	62	530	672 (182)	137	257	58	560	10 (6)	126	229	80	406
1989	585 (121)	140	293	64	558	1,039 (276)	140	256	63	460	33 (18)	155	239	47	369
1990	453 (90)	190	306	73	510	543 (138)	140	247	52	490	41 (8)	149	264	59	410
1991	282 (53)	205	306	64	490	523 (137)	164	266	60	460	29 (21)	130	214	62	460
1992	918 (156)	160	296	61	550	697 (167)	151	257	53	490	8 (7)	155	208	53	296
1993	396 (69)	190	318	63	511	510 (115)	121	262	48	408	22 (8)	155	230	70	400
1994	460 (88)	180	312	63	535	463 (137)	114	275	57	592	19 (13)	155	220	49	380
1995	414 (66)	202	326	66	523	391 (110)	130	260	54	416	4 (3)	182	197	10	204
1996	531 (81)	205	318	69	520	442 (117)	182	271	65	523	11 (6)	150	222	76	410
1997	280 (51)	161	296	62	580	475 (142)	145	275	51	511	7 (4)	180	304	82	400
1998	470 (87)	161	306	61	534	308 (94)	170	269	53	457	9 (7)	160	241	116	511
1999	397 (66)	230	318	65	630	363 (122)	171	305	58	455	9 (8)	190	223	38	308
2000	424 (86)	205	298	46	475	401 (120)	182	288	48	451	12 (7)	171	282	78	450
2001	578 (100)	236	313	46	480	650 (175)	204	305	46	440	17 (7)	174	236	53	358
2002	282 (60)	228	330	63	580	368 (110)	207	297	43	451	9 (5)	218	269	28	323
2003	871 (108)	235	303	47	539	403 (119)	209	297	41	433	3 (3)	288	327	34	352
2004	963 (145)	223	317	51	558	649 (162)	221	310	40	447	1 (1)	324	324	0	324
2005	946 (121)	233	307	50	522	515 (150)	209	303	45	455	3 (3)	275	336	100	452
2006	878 (122)	217	311	50	489	603 (150)	185	305	44	470	1 (1)	285	285	0	285
2007	714 (66)	227	321	38	511	446 (133)	180	322	59	553	5 (4)	196	268	58	345
2008	529 (89)	273	340	38	494	322 (87)	173	319	50	474	2 (2)	248	298	70	347
2009	751 (85)	270	338	40	611	279 (96)	229	325	31	458	2 (2)	236	263	38	290
2010	1,125 (127)	251	338	34	491	569 (147)	150	325	34	432	7 (5)	193	294	93	444
2011	503 (44)	240	348	46	490	348 (93)	196	338	36	535	8 (4)	247	323	47	410

	Cbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2012	529 (58)	282	365	40	486	563 (176)	210	340	57	514	5 (5)	307	357	40	420
2013	396 (47)	273	363	37	484	363 (110)	179	336	47	438	4 (4)	244	312	52	363
2014	522 (89)	303	351	26	465	415 (110)	229	358	41	490	8 (8)	124	312	77	354
2015	380 (74)	293	353	29	460	332 (113)	204	350	36	502	0 (0)	0	0	0	0
2016	338 (83)	303	361	31	520	282 (99)	204	352	38	447	0 (0)	0	0	0	0
2017	239 (46)	264	348	37	476	266 (88)	218	371	40	500	5 (4)	210	307	60	368
2018	281 (55)	284	353	29	442	168 (58)	201	342	54	428	2 (2)	176	262	122	348
2019	326 (54)	299	354	29	509	167 (60)	275	350	32	479	0 (0)	0	0	0	0
2020	408 (70)	294	353	31	523	280 (81)	203	347	43	447	6 (3)	341	356	17	382
2021	325 (73)	271	359	36	511	147 (68)	250	350	30	474	12 (4)	142	205	61	345

Table 11. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by mode and year. Summaries include the number of fish weighed by MRIP and, in parentheses, the number of angler trips from which those fish were weighed (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish weights.*

	Cbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	51 (10)	0.2	0.4	0.2	1.3	197 (42)	0.2	0.5	0.3	1.5	47 (19)	0.2	0.4	0.3	1.0
1982	18 (5)	0.2	0.5	0.4	1.1	615 (118)	0.1	0.7	0.5	2.8	18 (14)	0.2	0.4	0.3	1.4
1983	70 (12)	0.2	0.6	0.4	2.5	183 (35)	0.1	0.5	0.6	5.0	33 (17)	0.1	0.3	0.2	0.7
1984	209 (40)	0.2	0.8	0.5	3.1	324 (67)	0.1	0.8	0.5	2.7	33 (19)	0.1	0.3	0.2	1.1
1985	95 (16)	0.2	0.9	0.7	2.7	626 (121)	0.1	0.6	0.5	4.4	67 (31)	0.0	0.3	0.2	0.9
1986	252 (82)	0.2	0.5	0.5	2.9	579 (127)	0.2	0.7	0.4	2.9	12 (6)	0.2	0.5	0.4	1.3
1987	444 (81)	0.2	1.1	0.8	3.2	996 (209)	0.1	0.6	0.4	2.6	21 (16)	0.2	0.4	0.2	0.7
1988	265 (41)	0.2	0.9	0.5	3.3	307 (75)	0.2	0.6	0.4	2.6	2 (2)	0.2	0.4	0.3	0.7
1989	583 (121)	0.1	1.0	0.7	5.6	1,038 (276)	0.1	0.7	0.6	6.7	33 (18)	0.2	0.6	0.3	1.8
1990	391 (79)	0.2	1.2	1.0	6.1	542 (138)	0.2	0.6	0.4	2.9	41 (8)	0.2	0.7	0.4	1.3
1991	282 (53)	0.3	1.2	1.0	5.7	523 (137)	0.2	0.8	0.6	3.4	28 (20)	0.1	0.5	0.4	2.2
1992	918 (156)	0.2	1.0	0.6	5.4	635 (153)	0.2	0.7	0.4	3.7	7 (6)	0.2	0.4	0.3	0.9
1993	396 (69)	0.2	1.2	0.8	5.6	510 (115)	0.1	0.7	0.4	2.6	22 (8)	0.1	0.6	0.6	2.4

	Cbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1994	460 (88)	0.2	1.1	0.7	4.4	463 (137)	0.1	0.8	0.6	6.8	19 (13)	0.1	0.4	0.4	2.0
1995	414 (66)	0.2	1.3	0.8	4.2	391 (110)	0.1	0.6	0.4	2.5	4 (3)	0.2	0.3	0.1	0.5
1996	531 (81)	0.2	1.3	0.9	6.2	442 (117)	0.2	0.8	0.6	3.1	11 (6)	0.1	0.5	0.5	2.1
1997	280 (51)	0.2	1.1	0.8	8.0	475 (142)	0.1	0.8	0.5	3.5	7 (4)	0.2	1.0	0.7	2.2
1998	470 (87)	0.2	1.1	0.7	4.7	308 (94)	0.2	0.8	0.5	3.3	9 (7)	0.2	0.9	1.0	3.1
1999	397 (66)	0.1	1.2	1.1	9.4	363 (122)	0.2	1.0	0.5	2.9	9 (8)	0.1	0.4	0.3	1.1
2000	424 (86)	0.2	1.0	0.5	3.4	401 (120)	0.2	0.9	0.6	7.3	12 (7)	0.1	0.8	0.6	2.2
2001	567 (97)	0.3	1.2	0.6	4.5	650 (175)	0.3	1.0	0.4	2.7	17 (7)	0.2	0.6	0.4	1.9
2002	282 (60)	0.4	1.5	1.0	4.6	368 (110)	0.4	0.9	0.4	2.7	9 (5)	0.4	0.7	0.2	0.9
2003	871 (108)	0.4	1.2	0.7	4.6	403 (119)	0.3	0.9	0.4	3.1	3 (3)	0.8	1.2	0.3	1.4
2004	957 (143)	0.4	1.1	0.6	4.9	649 (162)	0.3	1.0	0.4	2.8	1 (1)	0.9	0.9	0.0	0.9
2005	946 (121)	0.4	1.0	0.6	4.0	515 (150)	0.4	0.9	0.4	2.6	3 (3)	0.7	1.3	0.9	2.4
2006	868 (120)	0.3	1.1	0.6	4.0	603 (150)	0.3	0.9	0.4	3.0	1 (1)	0.7	0.7	0.0	0.7
2007	714 (66)	0.5	1.1	0.4	5.5	446 (133)	0.1	1.1	0.7	4.4	5 (4)	0.2	0.7	0.3	1.1
2008	529 (89)	0.7	1.3	0.5	3.3	322 (87)	0.2	1.1	0.4	3.4	2 (2)	0.5	1.0	0.7	1.5
2009	751 (85)	0.7	1.3	0.7	8.8	279 (96)	0.4	1.1	0.3	3.3	2 (2)	0.4	0.6	0.2	0.8
2010	1,125 (127)	0.6	1.3	0.4	3.7	569 (147)	0.2	1.1	0.3	2.6	7 (5)	0.3	1.0	0.7	2.4
2011	503 (44)	0.4	1.4	0.6	4.0	348 (93)	0.2	1.2	0.4	3.3	8 (4)	0.6	1.2	0.5	2.2
2012	529 (58)	0.4	1.5	0.6	4.0	563 (176)	0.3	1.3	0.7	5.5	5 (5)	1.0	1.6	0.6	2.6
2013	396 (47)	0.7	1.5	0.5	3.3	363 (110)	0.2	1.3	0.5	2.6	4 (4)	0.4	1.0	0.5	1.5
2014	522 (89)	0.7	1.3	0.4	3.2	415 (110)	0.4	1.5	0.5	3.5	8 (8)	0.1	1.0	0.4	1.4
2015	380 (74)	0.8	1.4	0.4	3.0	332 (113)	0.3	1.4	0.5	3.5	0 (0)	0.0	0.0	0.0	0.0
2016	338 (83)	0.7	1.5	0.4	4.0	282 (99)	0.3	1.4	0.4	2.8	0 (0)	0.0	0.0	0.0	0.0
2017	239 (46)	0.6	1.3	0.5	3.3	266 (88)	0.3	1.6	0.5	2.9	5 (4)	0.3	1.0	0.4	1.5
2018	281 (55)	0.6	1.4	0.4	3.3	168 (58)	0.2	1.3	0.5	2.6	2 (2)	0.2	0.8	0.8	1.4
2019	326 (54)	0.8	1.4	0.4	3.5	167 (60)	0.7	1.3	0.4	3.7	0 (0)	0.0	0.0	0.0	0.0
2020	408 (70)	0.8	1.3	0.5	4.9	280 (81)	0.3	1.4	0.5	2.9	6 (3)	1.0	1.3	0.2	1.7
2021	325 (73)	0.7	1.4	0.5	5.5	147 (68)	0.5	1.3	0.4	3.3	12 (4)	0.1	0.4	0.3	1.2

Table 12. *Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Black Sea Bass by year. Summaries include the number of fish for which size information was collected by MRIP and, in parentheses, the number of angler trips from which those fish were sampled (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths and weights.*

	Length					Weight				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	306 (72)	120	204	44	380	295 (71)	0.2	0.5	0.3	1.5
1982	651 (137)	100	250	67	500	651 (137)	0.1	0.7	0.5	2.8
1983	287 (64)	30	236	62	474	286 (64)	0.1	0.5	0.5	5.0
1984	566 (126)	120	269	60	440	566 (126)	0.1	0.8	0.5	3.1
1985	796 (169)	105	249	68	490	788 (168)	0.0	0.6	0.6	4.4
1986	847 (217)	130	255	63	430	843 (215)	0.2	0.6	0.5	2.9
1987	1,473 (306)	138	264	67	470	1,461 (306)	0.1	0.7	0.6	3.2
1988	1,290 (299)	126	270	62	560	574 (118)	0.2	0.8	0.5	3.3
1989	1,657 (415)	140	269	66	558	1,654 (415)	0.1	0.8	0.7	6.7
1990	1,037 (236)	140	274	69	510	974 (225)	0.2	0.9	0.7	6.1
1991	834 (211)	130	277	65	490	833 (210)	0.1	0.9	0.8	5.7
1992	1,623 (330)	151	279	61	550	1,560 (315)	0.2	0.9	0.6	5.4
1993	928 (192)	121	285	62	511	928 (192)	0.1	0.9	0.6	5.6
1994	942 (238)	114	292	64	592	942 (238)	0.1	0.9	0.7	6.8
1995	809 (179)	130	293	69	523	809 (179)	0.1	1.0	0.7	4.2
1996	984 (204)	150	296	72	523	984 (204)	0.1	1.0	0.8	6.2
1997	762 (197)	145	283	56	580	762 (197)	0.1	0.9	0.6	8.0
1998	787 (188)	160	291	62	534	787 (188)	0.2	1.0	0.7	4.7
1999	769 (196)	171	311	63	630	769 (196)	0.1	1.1	0.9	9.4
2000	837 (213)	171	293	47	475	837 (213)	0.1	1.0	0.6	7.3
2001	1,245 (282)	174	308	47	480	1,234 (279)	0.2	1.1	0.5	4.5
2002	659 (175)	207	311	55	580	659 (175)	0.4	1.2	0.8	4.6
2003	1,277 (230)	209	301	45	539	1,277 (230)	0.3	1.1	0.6	4.6
2004	1,613 (308)	221	314	47	558	1,607 (306)	0.3	1.0	0.5	4.9
2005	1,464 (274)	209	306	49	522	1,464 (274)	0.4	0.9	0.5	4.0
2006	1,482 (273)	185	309	48	489	1,472 (271)	0.3	1.0	0.5	4.0
2007	1,165 (203)	180	321	47	553	1,165 (203)	0.1	1.1	0.6	5.5
2008	853 (178)	173	332	44	494	853 (178)	0.2	1.2	0.5	3.4
2009	1,032 (183)	229	335	39	611	1,032 (183)	0.4	1.2	0.6	8.8
2010	1,701 (279)	150	334	35	491	1,701 (279)	0.2	1.2	0.4	3.7
2011	859 (141)	196	344	43	535	859 (141)	0.2	1.3	0.5	4.0
2012	1,097 (239)	210	352	51	514	1,097 (239)	0.3	1.4	0.6	5.5
2013	763 (161)	179	350	44	484	763 (161)	0.2	1.4	0.5	3.3
2014	945 (207)	124	354	34	490	945 (207)	0.1	1.4	0.4	3.5
2015	712 (187)	204	352	33	502	712 (187)	0.3	1.4	0.4	3.5
2016	620 (182)	204	357	35	520	620 (182)	0.3	1.4	0.4	4.0
2017	510 (138)	210	359	41	500	510 (138)	0.3	1.5	0.5	3.3
2018	451 (115)	176	349	42	442	451 (115)	0.2	1.4	0.5	3.3
2019	493 (114)	275	353	30	509	493 (114)	0.7	1.4	0.4	3.7
2020	694 (154)	203	351	37	523	694 (154)	0.3	1.4	0.5	4.9

	Length					Weight				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2021	484 (145)	142	353	42	511	484 (145)	0.1	1.4	0.5	5.5

Table 13. *Estimated average weights of landed Black Sea Bass in pounds whole weight (WGT) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode (MRIP). Average weight estimates are calculated from annual estimates (by-mode) of landings-in-weight (Table 7) divided by estimates of landings-in-number(Table 2). Sample size (N) is provided as the total number of angler trips and, in parentheses, number of fish from which weight information was collected.*

	Cbt			Priv			Shore			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
1981	0.45	0.11	10 (51)	0.76	0.26	42 (197)	0.36	0.23	19 (47)	0.49	0.24	71 (295)
1982	0.77	0.14	5 (18)	0.84	0.16	118 (615)	0.75	0.00	14 (18)	0.83	0.15	137 (651)
1983	0.49	0.18	12 (70)	0.45	0.17	35 (183)	0.45	0.07	17 (33)	0.46	0.17	64 (286)
1984	0.77	0.24	40 (209)	0.94	0.24	67 (324)	0.67	0.27	19 (33)	0.90	0.25	126 (566)
1985	0.80	0.26	16 (95)	0.67	0.28	121 (626)	0.36	0.24	31 (67)	0.66	0.28	168 (788)
1986	0.89	0.20	82 (252)	0.59	0.18	127 (579)	0.67	0.19	6 (12)	0.63	0.18	215 (843)
1987	1.13	0.19	81 (444)	0.67	0.27	209 (996)	0.67	0.10	16 (21)	0.72	0.24	306 (1,461)
1988	1.04	0.14	41 (265)	0.64	0.16	75 (307)	1.00	0.00	2 (2)	0.79	0.15	118 (574)
1989	0.96	0.16	121 (583)	0.85	0.21	276 (1,038)	0.70	0.16	18 (33)	0.87	0.19	415 (1,654)
1990	1.41	0.21	79 (391)	0.68	0.16	138 (542)	0.66	0.19	8 (41)	0.81	0.22	225 (974)
1991	1.16	0.21	53 (282)	0.79	0.19	137 (523)	1.05	0.20	20 (28)	0.86	0.21	210 (833)
1992	1.00	0.12	156 (918)	0.67	0.18	153 (635)	0.89	0.41	6 (7)	0.74	0.15	315 (1,560)
1993	1.31	0.13	69 (396)	0.74	0.23	115 (510)	1.17	0.24	8 (22)	0.88	0.18	192 (928)
1994	1.08	0.15	88 (460)	0.79	0.22	137 (463)	1.05	0.19	13 (19)	0.84	0.19	238 (942)
1995	1.41	0.13	66 (414)	0.76	0.19	110 (391)	0.76	0.00	3 (4)	0.91	0.16	179 (809)
1996	1.33	0.21	81 (531)	0.95	0.28	117 (442)	1.14	0.00	6 (11)	1.00	0.25	204 (984)
1997	1.17	0.18	51 (280)	0.90	0.21	142 (475)	0.92	0.00	4 (7)	0.96	0.20	197 (762)
1998	0.94	0.18	87 (470)	0.83	0.23	94 (308)	0.98	0.00	7 (9)	0.86	0.20	188 (787)
1999	1.43	0.44	66 (397)	1.11	0.15	122 (363)	1.10	0.00	8 (9)	1.14	0.34	196 (769)
2000	0.95	0.11	86 (424)	0.98	0.16	120 (401)	1.04	0.00	7 (12)	0.98	0.14	213 (837)
2001	1.17	0.11	97 (567)	1.04	0.11	175 (650)	1.15	0.32	7 (17)	1.06	0.12	279 (1,234)
2002	1.61	0.15	60 (282)	0.95	0.13	110 (368)	1.00	0.19	5 (9)	1.02	0.15	175 (659)
2003	1.22	0.10	108 (871)	0.93	0.16	119 (403)	1.02	0.08	3 (3)	0.99	0.13	230 (1,277)
2004	1.12	0.19	143 (957)	0.95	0.11	162 (649)	1.04	0.00	1 (1)	0.96	0.16	306 (1,607)
2005	1.54	0.11	121 (946)	0.94	0.16	150 (515)	1.04	0.00	3 (3)	1.02	0.13	274 (1,464)
2006	1.09	0.15	120 (868)	0.89	0.15	150 (603)	0.97	0.00	1 (1)	0.90	0.15	271 (1,472)
2007	1.17	0.11	66 (714)	1.12	0.13	133 (446)	1.01	0.24	4 (5)	1.12	0.12	203 (1,165)
2008	1.38	0.08	89 (529)	1.03	0.21	87 (322)	0.96	0.00	2 (2)	1.04	0.14	178 (853)
2009	1.20	0.15	85 (751)	1.08	0.09	96 (279)	1.03	0.29	2 (2)	1.09	0.13	183 (1,032)
2010	1.27	0.08	127 (1,125)	1.11	0.10	147 (569)	1.09	0.00	5 (7)	1.12	0.09	279 (1,701)
2011	1.23	0.09	44 (503)	1.20	0.08	93 (348)	1.52	0.12	4 (8)	1.20	0.09	141 (859)
2012	1.54	0.07	58 (529)	1.14	0.18	176 (563)	1.21	0.00	5 (5)	1.17	0.15	239 (1,097)
2013	1.50	0.05	47 (396)	1.23	0.13	110 (363)	1.52	0.27	4 (4)	1.24	0.11	161 (763)
2014	1.31	0.07	89 (522)	1.57	0.11	110 (415)	1.36	0.05	8 (8)	1.54	0.10	207 (945)
2015	1.29	0.09	74 (380)	1.36	0.12	113 (332)	0.00	0.00	0	1.36	0.11	187 (712)
2016	1.38	0.07	83 (338)	1.44	0.09	99 (282)	0.00	0.00	0	1.43	0.08	182 (620)
2017	1.40	0.09	46 (239)	1.75	0.12	88 (266)	1.36	0.00	4 (5)	1.71	0.11	138 (510)
2018	1.33	0.07	64 (281)	1.27	0.13	65 (168)	1.50	0.00	2 (2)	1.28	0.10	131 (451)
2019	1.32	0.08	62 (326)	1.29	0.08	63 (167)	0.00	0.00	0	1.29	0.08	125 (493)
2020	1.34	0.10	80 (408)	1.29	0.08	89 (280)	1.51	0.20	3 (6)	1.32	0.09	172 (694)
2021	1.36	0.10	73 (325)	1.32	0.10	68 (147)	1.16	0.00	4 (12)	1.29	0.10	145 (484)

Table 14. *Resolution of landings-in-weight estimates (pounds whole weight) for South Atlantic Black Sea Bass by year and hierarchy level (MRIP), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019b). 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 and angler trips from which weight information was collected (N) 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* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode, and* ***w****ave (i.e., weight observations collapsed across areas).*

		AB1.lbs			
Year	N	srys	srysm	srysmw	srysmwa
1981	295 (71)	362,926	896,752	97,899	276,553
1982	651 (137)	335,467	908,117	257,031	1,912,284
1983	286 (64)	149,580	254,229	107,471	217,533
1984	566 (126)	120,530	637,383	130,195	2,319,572
1985	788 (168)	114,435	521,337	191,734	1,414,810
1986	843 (215)	50,984	219,632	363,336	753,119
1987	1,461 (306)	55,237	50,619	226,731	962,367
1988	574 (118)	191,665	379,400	47,288	362,771
1989	1,654 (415)	126,466	104,989	339,742	1,019,288
1990	974 (225)	3,930	150,750	30,772	613,993
1991	833 (210)	122,041	33,537	236,631	639,331
1992	1,560 (315)	11,065	132,373	173,933	656,013
1993	928 (192)	95,507	123,222	184,137	398,902
1994	942 (238)	74,285	116,691	123,625	727,436
1995	809 (179)	6,306	165,699	39,078	390,552
1996	984 (204)	30,829	52,592	364,976	662,615
1997	762 (197)	26,533	153,622	125,019	517,245
1998	787 (188)	49,285	187,513	65,817	240,739
1999	769 (196)	36,485	31,704	83,905	441,148
2000	837 (213)	28,237	154,801	398,882	313,691
2001	1,234 (279)	77,596	94,689	99,046	1,171,441
2002	659 (175)	48,561	143,169	232,790	385,084
2003	1,277 (230)	64,486	93,078	147,960	554,075
2004	1,607 (306)	9,228	493,170	190,030	1,407,585
2005	1,464 (274)	15,883	107,157	91,086	1,287,195
2006	1,472 (271)	3,825	30,044	195,629	943,297
2007	1,165 (203)	42,140	213,224	133,188	596,355
2008	853 (178)	8,529	221,209	124,845	558,269
2009	1,032 (183)	15,805	196,112	57,523	459,941
2010	1,701 (279)	41,136	51,023	51,903	1,323,440
2011	859 (141)	7,367	215,124	69,054	744,186
2012	1,097 (239)	60,360	19,819	97,030	622,669
2013	763 (161)	7,446	140,218	51,151	560,928
2014	945 (207)	38,120	470,437	138,172	1,066,164
2015	712 (187)	0	257,759	102,592	622,139
2016	620 (182)	21,598	123,975	138,357	507,601
2017	510 (138)	27,359	184,573	48,868	757,723
2018	451 (115)	12,655	149,862	51,247	225,706
2019	493 (114)	0	250,110	44,630	235,799

		AB1.lbs			
Year	N	srys	srysm	srysmw	srysmwa
2020	694 (154)	41,716	104,494	10,557	142,593
2021	484 (145)	64,506	105,281	17,927	162,221

Table 15. *Recreational Fishing Effort (in angler trips) for South Atlantic anglers by state and year (MRIP). These effort estimates depict all (general) recreational fishing activity in the South Atlantic and are not specific to Black Sea Bass. NC only includes those areas south of Cape Hatteras.*

Year	FLE	GA	SC	NC	Total
1981	31,660,427	1,140,686	3,499,698	3,506,446	39,807,257
1982	42,352,017	1,330,594	3,855,423	5,046,934	52,584,968
1983	40,631,469	1,393,987	4,392,586	3,541,307	49,959,349
1984	40,625,068	1,459,467	4,321,818	4,467,990	50,874,343
1985	39,643,873	1,684,391	4,285,327	4,397,834	50,011,425
1986	42,317,136	1,766,834	4,217,620	4,209,689	52,511,279
1987	44,172,997	1,773,450	4,119,771	5,643,905	55,710,123
1988	39,146,830	1,683,851	3,987,476	5,233,307	50,051,464
1989	39,253,969	1,801,763	4,321,550	5,902,040	51,279,322
1990	39,258,351	1,834,320	4,571,431	5,832,206	51,496,308
1991	41,678,398	1,804,463	4,904,800	6,800,371	55,188,032
1992	42,875,507	1,753,767	4,830,569	6,235,267	55,695,110
1993	41,980,014	1,769,651	4,977,833	6,726,586	55,454,084
1994	41,906,013	1,800,943	4,890,627	6,309,107	54,906,690
1995	38,928,615	1,743,589	4,643,418	6,139,353	51,454,975
1996	41,111,552	1,792,198	4,740,103	5,423,177	53,067,030
1997	42,185,109	1,794,338	5,117,321	5,593,555	54,690,323
1998	41,282,599	1,897,330	5,062,297	5,726,907	53,969,133
1999	39,870,443	2,061,785	5,368,897	6,342,998	53,644,123
2000	43,809,306	2,365,941	5,969,116	6,371,077	58,515,440
2001	43,765,525	2,312,729	6,070,604	7,406,535	59,555,393
2002	44,866,670	2,323,023	6,491,172	7,791,428	61,472,293
2003	45,044,832	2,500,555	6,499,483	8,926,488	62,971,358
2004	42,936,332	2,551,027	6,973,606	9,050,226	61,511,191
2005	47,794,997	2,717,106	7,156,559	10,404,563	68,073,225
2006	49,056,377	2,643,209	7,462,121	9,374,739	68,536,446
2007	48,447,259	2,823,131	7,364,699	9,743,974	68,379,063
2008	45,921,204	2,855,466	8,062,558	10,405,526	67,244,754
2009	49,009,618	2,692,566	7,557,887	9,818,492	69,078,563
2010	48,952,258	2,707,465	8,027,939	11,335,073	71,022,735
2011	45,795,256	2,902,422	8,507,040	12,154,615	69,359,333
2012	39,677,797	2,989,846	8,110,949	12,474,291	63,252,883
2013	37,306,011	3,319,694	9,751,329	12,341,478	62,718,512
2014	43,967,506	3,736,954	8,745,715	12,580,870	69,031,045
2015	42,395,466	4,108,912	8,962,210	11,534,828	67,001,416
2016	38,695,081	3,880,485	9,335,002	10,856,239	62,766,807
2017	40,403,524	4,624,303	9,388,908	11,784,463	66,201,198
2018	43,986,704	4,592,649	9,897,323	9,420,700	67,897,376
2019	35,930,004	4,020,594	11,838,556	10,083,124	61,872,278
2020	40,436,260	4,890,201	8,733,689	10,762,408	64,822,558
2021	42,051,994	5,186,277	11,944,761	11,744,679	70,927,711

Table 16. *Recreational Fishing Effort (in angler trips) for South Atlantic anglers by mode and year (MRIP). These effort estimates depict all (general) recreational fishing activity in the South Atlantic and are not specific to Black Sea Bass.*

Year	Cbt	Priv	Shore	Total
1981	366,036	8,142,241	31,298,979	39,807,256
1982	354,305	10,690,540	41,540,124	52,584,969
1983	360,885	10,357,877	39,240,586	49,959,348
1984	417,471	11,473,168	38,983,704	50,874,343
1985	430,065	12,167,874	37,413,486	50,011,425
1986	512,354	12,912,131	39,086,794	52,511,279
1987	464,265	13,654,967	41,590,891	55,710,123
1988	436,093	11,807,402	37,807,968	50,051,463
1989	463,927	12,571,224	38,244,170	51,279,321
1990	424,404	11,990,063	39,081,840	51,496,307
1991	321,906	12,581,374	42,284,750	55,188,030
1992	340,666	13,264,597	42,089,847	55,695,110
1993	370,323	13,788,593	41,295,169	55,454,085
1994	384,943	14,171,054	40,350,691	54,906,688
1995	376,600	13,041,070	38,037,305	51,454,975
1996	362,312	13,539,032	39,165,686	53,067,030
1997	344,425	13,864,948	40,480,950	54,690,323
1998	336,307	14,070,533	39,562,293	53,969,133
1999	323,632	14,552,634	38,767,857	53,644,123
2000	227,149	17,647,330	40,640,962	58,515,441
2001	307,844	16,964,864	42,282,685	59,555,393
2002	377,467	18,238,293	42,856,534	61,472,294
2003	355,800	19,736,348	42,879,212	62,971,360
2004	356,761	18,032,967	43,121,462	61,511,190
2005	311,823	20,232,053	47,529,347	68,073,223
2006	316,639	21,878,021	46,341,786	68,536,446
2007	322,473	22,626,211	45,430,379	68,379,063
2008	257,991	20,534,011	46,452,753	67,244,755
2009	325,915	22,626,460	46,126,189	69,078,564
2010	253,974	24,543,053	46,225,708	71,022,735
2011	268,476	22,358,030	46,732,827	69,359,333
2012	265,946	20,079,658	42,907,279	63,252,883
2013	273,109	19,808,961	42,636,441	62,718,511
2014	354,402	21,191,791	47,484,852	69,031,045
2015	384,421	20,630,553	45,986,443	67,001,417
2016	400,413	20,290,095	42,076,299	62,766,807
2017	397,223	20,522,006	45,281,969	66,201,198
2018	414,770	22,079,226	45,403,381	67,897,377
2019	458,105	19,939,254	41,474,920	61,872,279
2020	425,105	21,910,162	42,487,291	64,822,558
2021	618,723	21,094,146	49,214,841	70,927,710

Figure 1. *Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Black Sea Bass 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 (2019a).*

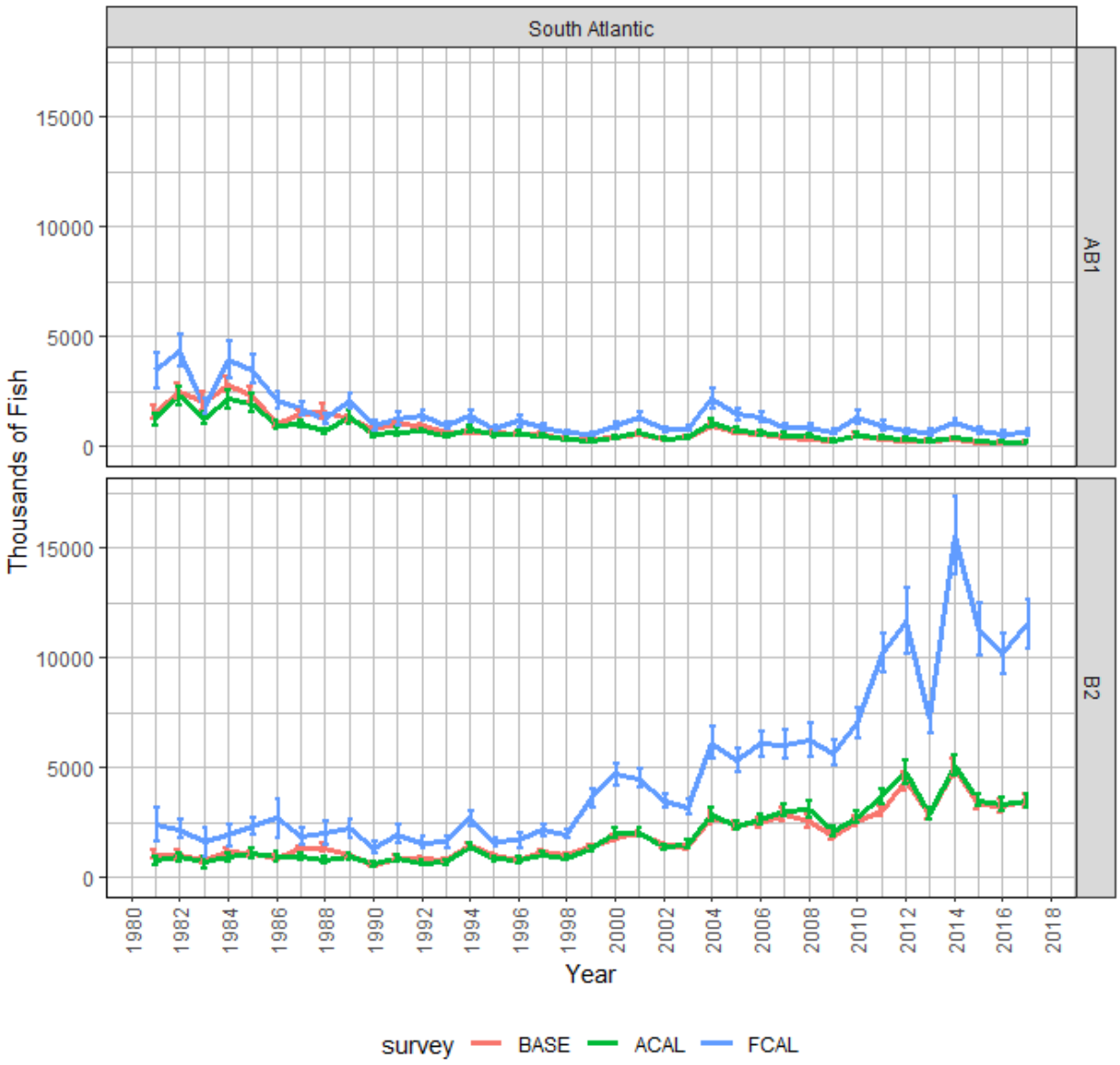

Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Black Sea Bass in the South Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include northern North Carolina as that domain is not separable from those used by the MRIP online comparison tool for the South Atlantic (NMFS).*

Figure 3. *Comparison of total general recreational landings (AB1) and discard estimates (B2) for South Atlantic black sea bass between SEDAR 76 and SEDAR 56, the terminal years of which are 2021 and 2016 respectively. Differences in catch estimates, which are in thousands of fish, are largely a function of changes in the MRIP survey (i.e., FES in 2018).*

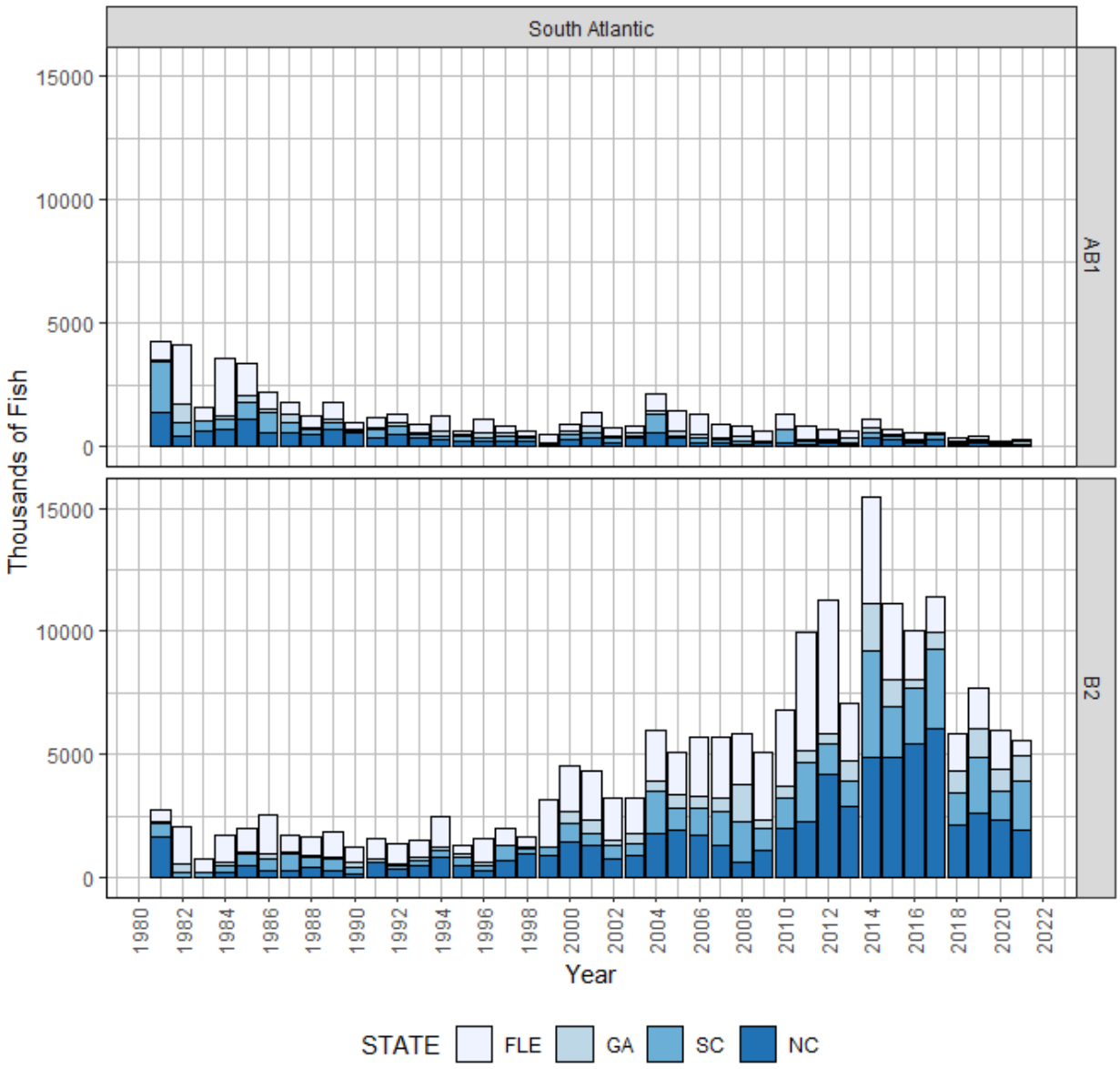

Figure 4. *Annual Black Sea Bass landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2021 (MRIP). NC only includes those areas south of Cape Hatteras.*

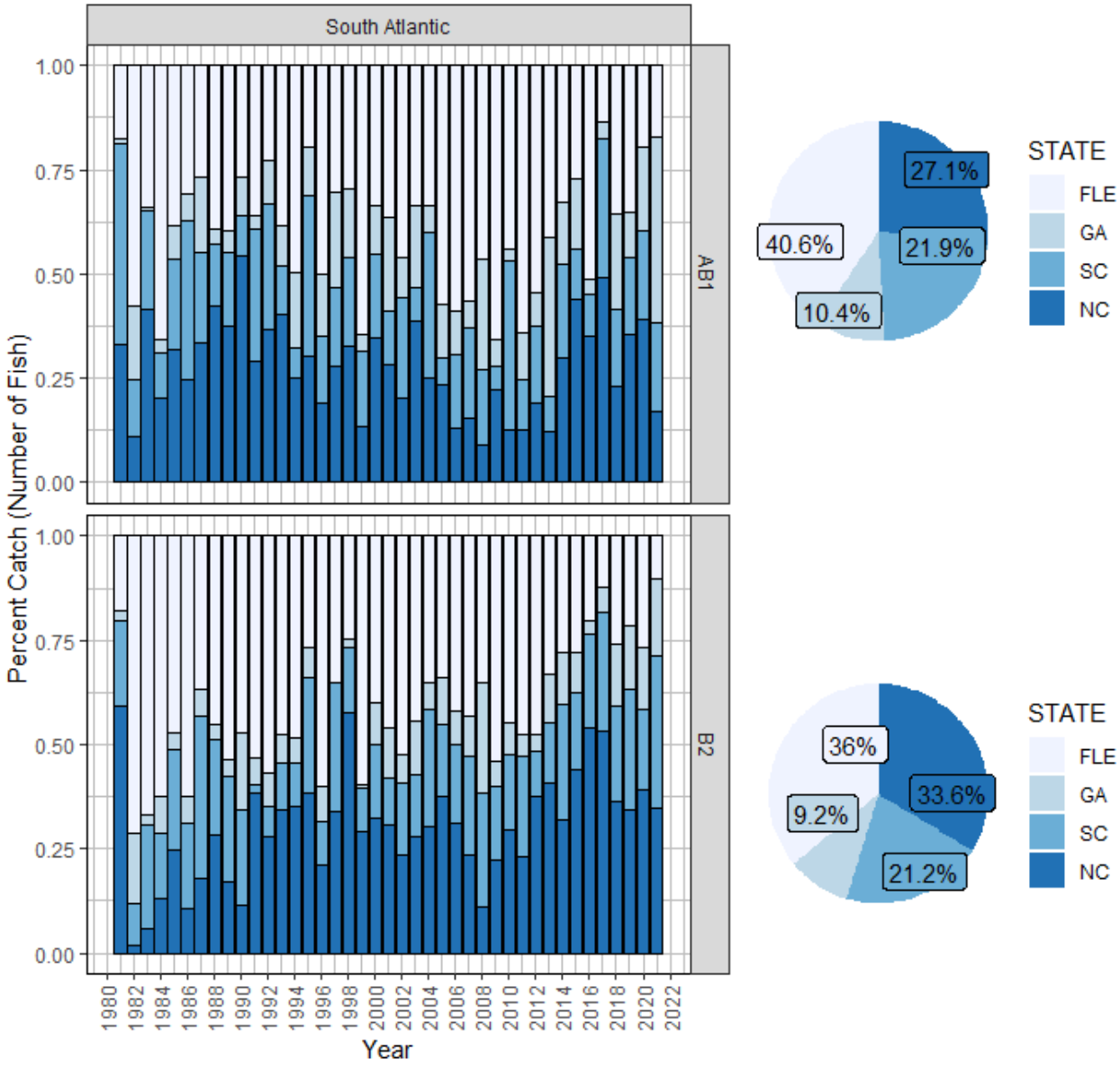

Figure 4a. *Percent of Black Sea Bass landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP). NC only includes those areas south of Cape Hatteras.*

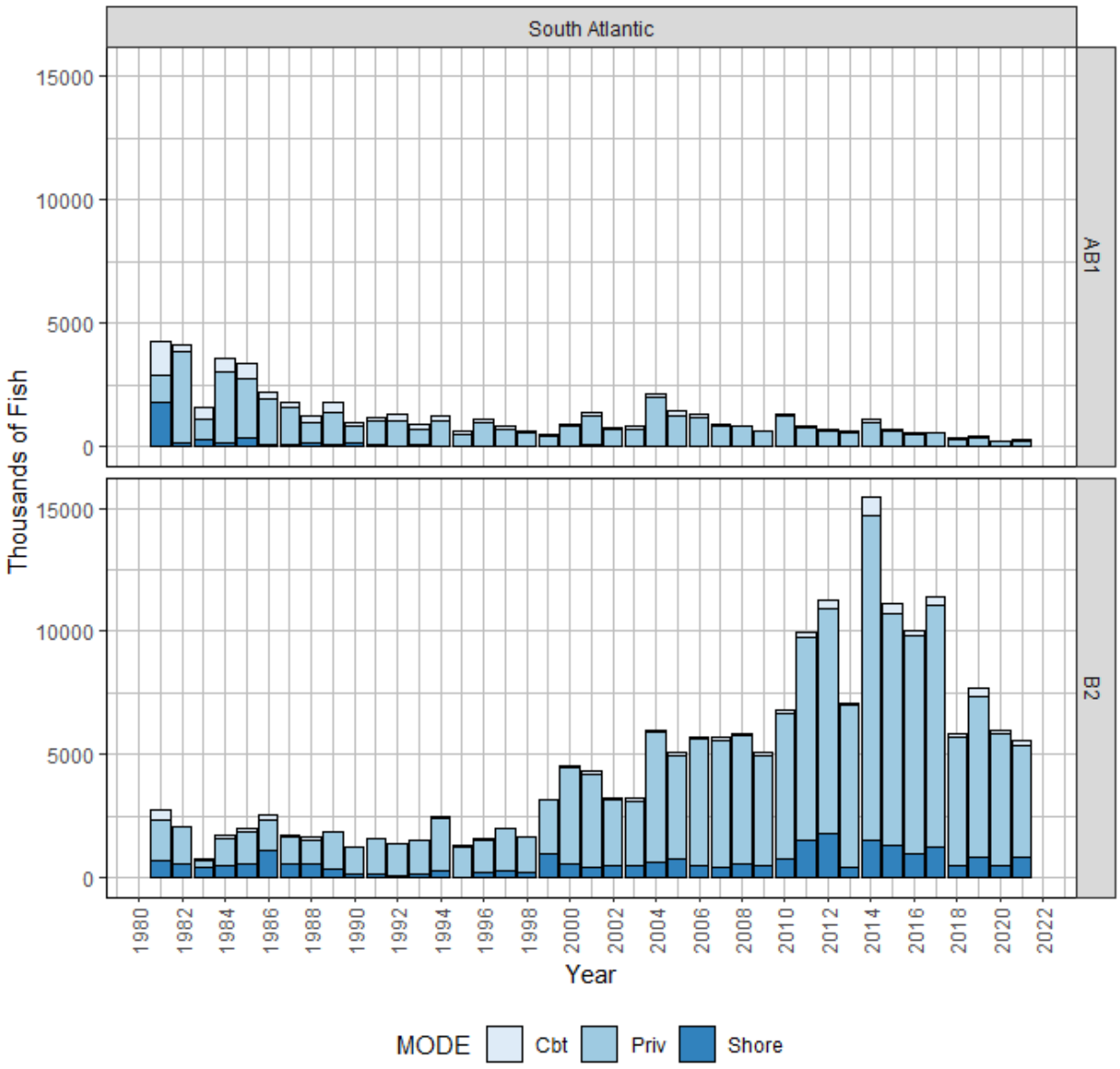

Figure 5. *Annual Black Sea Bass landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP).*

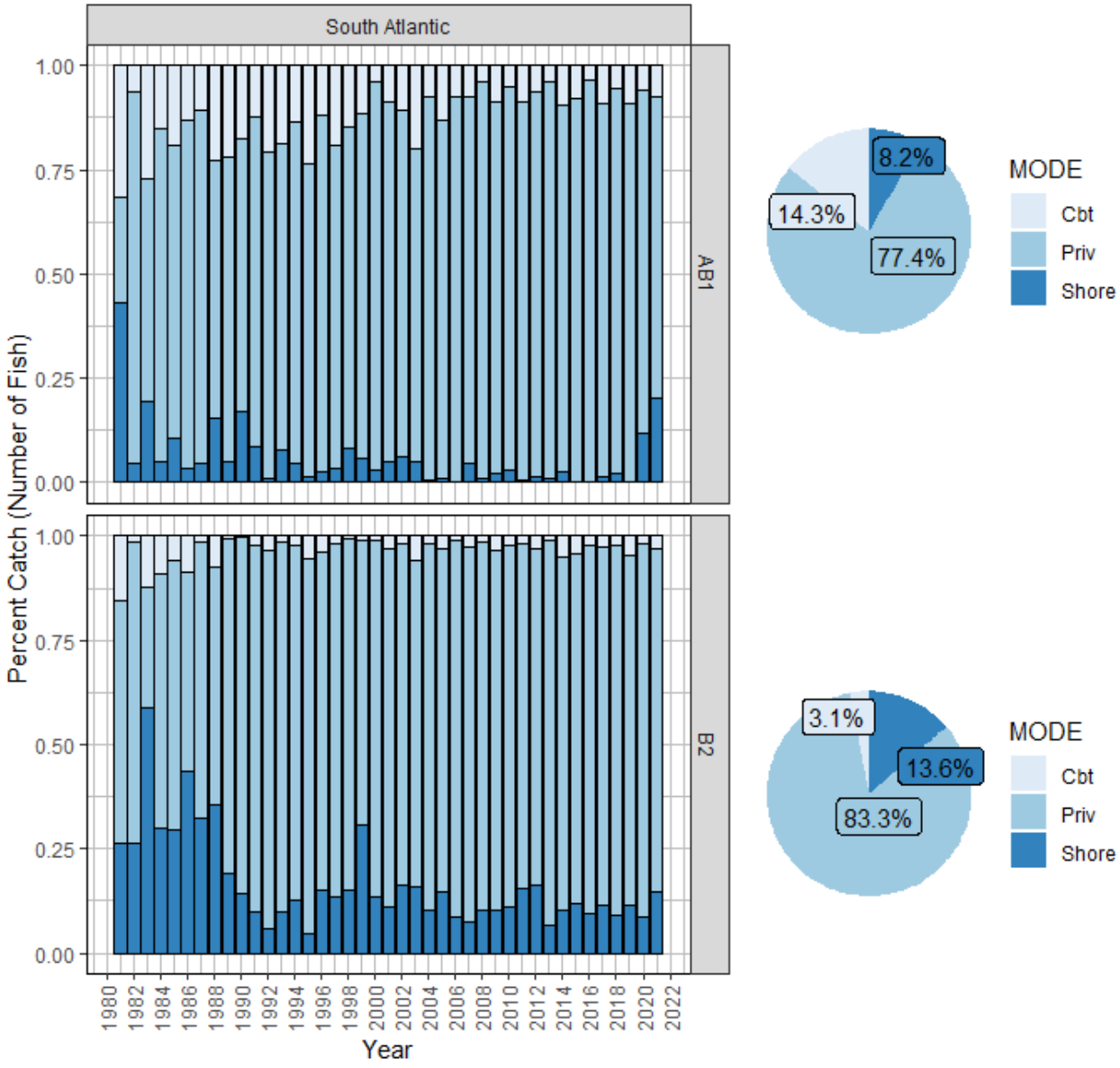

Figure 5a. *Percent of Black Sea Bass landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP).*

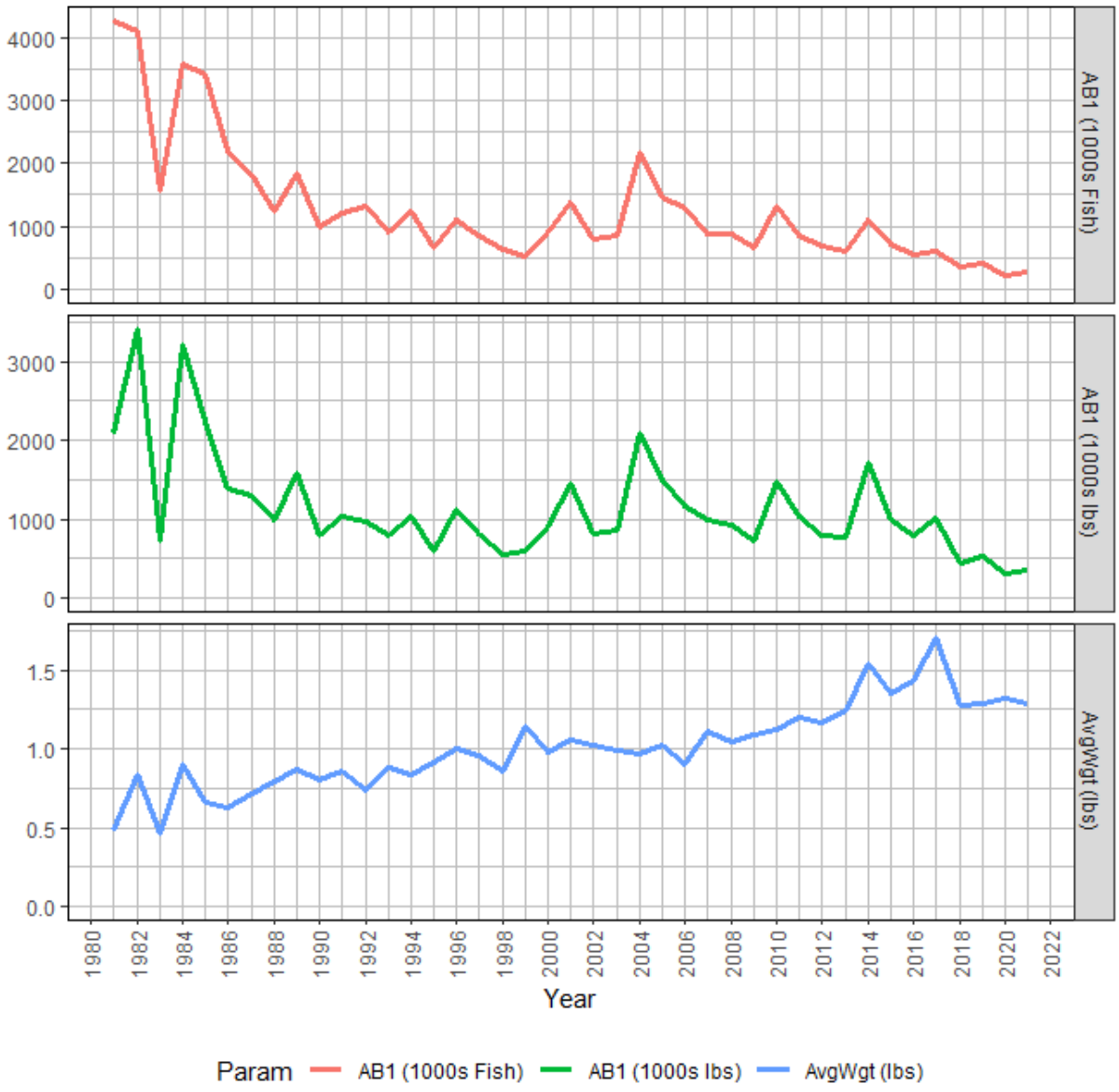

Figure 6. *Estimates of annual landings for Black Sea Bass in the South Atlantic (MRIP): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates 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 2019b).*

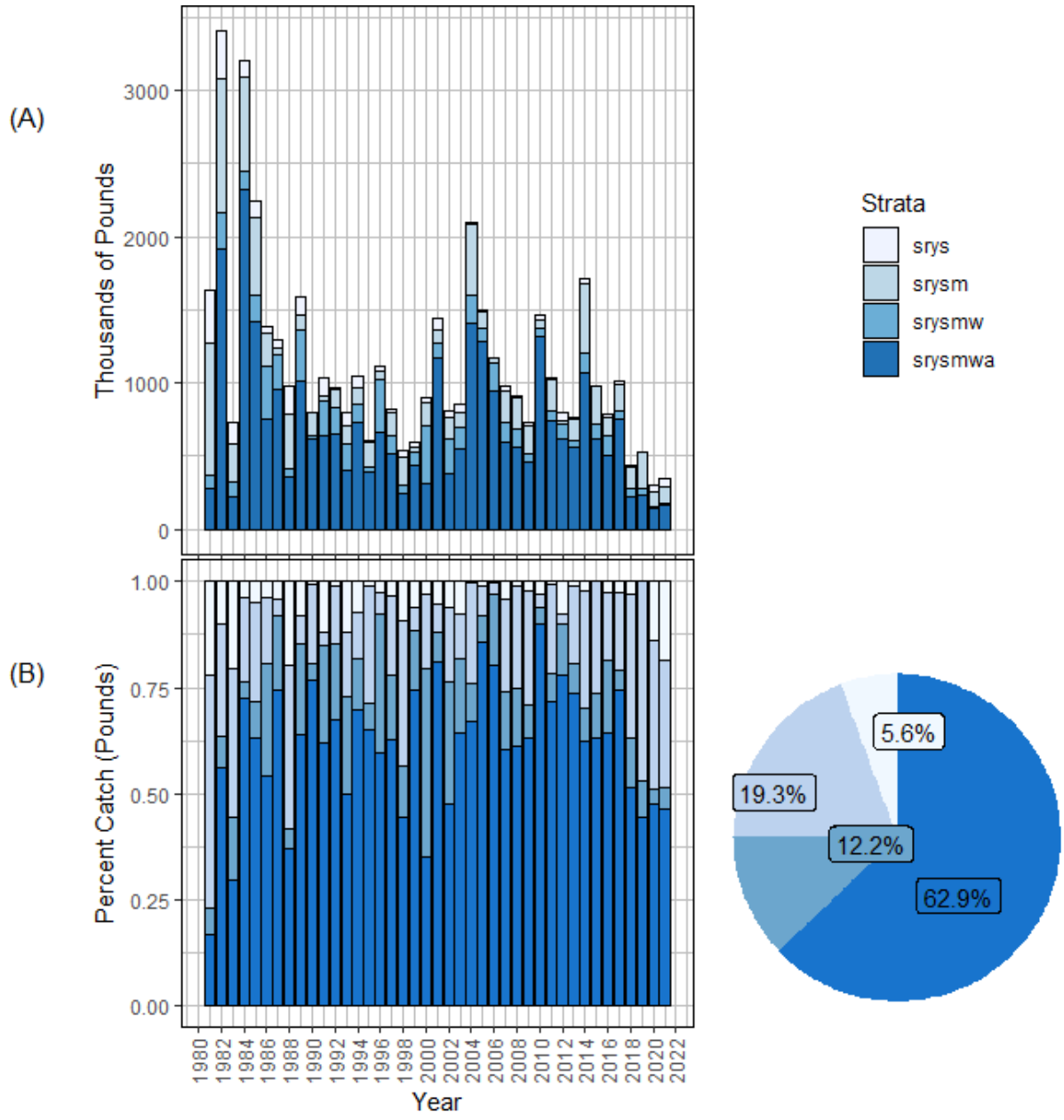

Figure 7. *Annual landings estimates of South Atlantic Black Sea Bass in thousands of pounds whole weight by hierarchy level (MRIP), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata at which average 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* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode, and* ***w****ave (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).*

(A)

Wave	Cbt		Priv		Shore	
	RAW	IMP	RAW	IMP	RAW	IMP
2	15	105	89	278	1	26
3	64	65	121	191	7	21
4	171		351		24	
5	55		241		26	
6	33		188		27	
1			73			

(B)

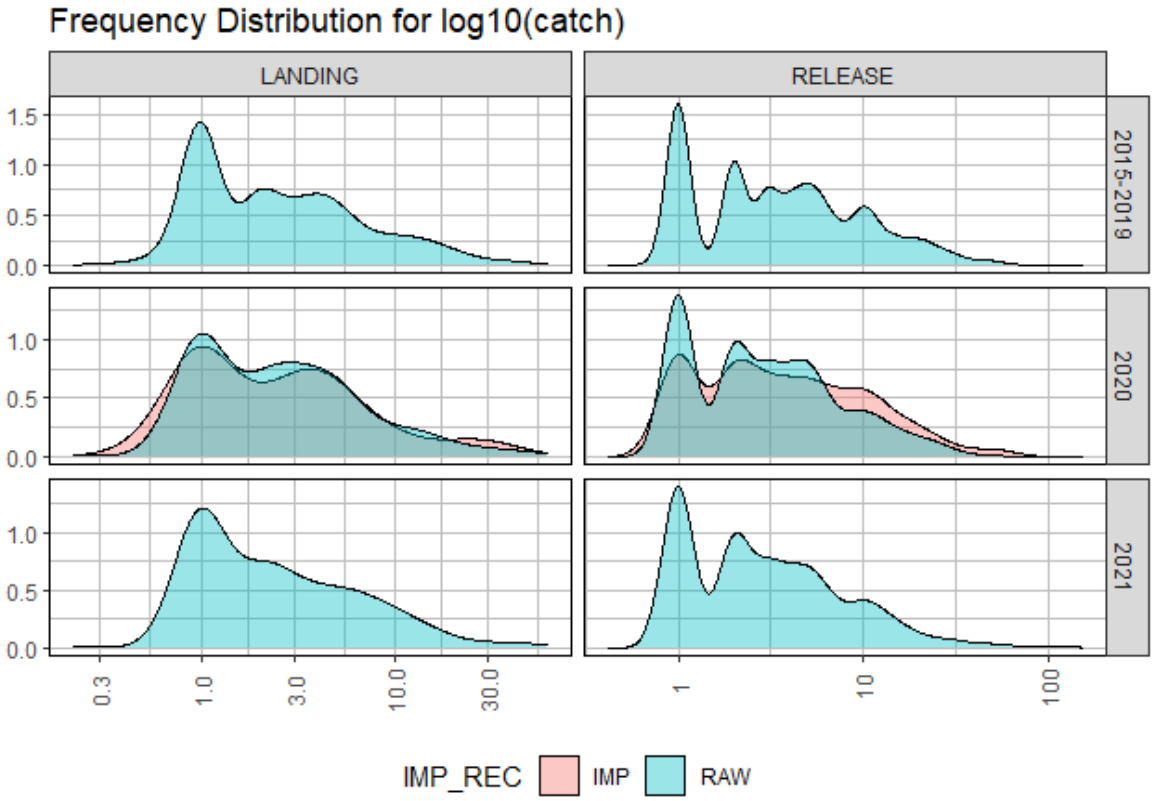

Figure 8. *COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic black sea bass. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2021), in raw 2020 APAIS data, and in 2020 imputations. Refer to Cody (2021) for more information on COVID data gaps in MRIP.*

Appendix A

Additional Details of Survey Data and SEFSC Estimation

- MRIP Survey Methodology: Fully calibrated estimates that take into account the change in the Fishing Effort Survey (FES; 2018), the redesigned Access Point Angler Intercept Survey (APAIS; 2013), and the For Hire Survey (FHS; 2000 for eastern Florida and 2004 for all Atlantic states north of Florida).
  - Papacostas and Foster (2021) provide descriptions of the approaches used by the Office of Science and Technology to calibrate MRIP (1) effort estimates derived from the legacy Coastal Household Telephone Survey (CHTS) into FES units for the private and shore modes and (2) catch rate estimates between the original and redesigned APAIS for all modes.
  - SEFSC calibrations of catch and effort estimates between CHTS and FHS units are calculated for for-hire by year, region, state, wave, and area fished according to Dettloff and Matter (2019a). Figure 1 summarizes the resultant scaling of CHTS catch estimates under the FHS calibration ratios.
- MRIP Data Gap 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 Weight Estimation: Average (fish) 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 2019b). Size records above an allowable (max size) threshold are excluded from weight estimation and the summary tables included in this working paper (Tables 8-12). For SEDAR 76 black sea bass, this includes any weights heavier than 9.933 pounds.
- SEFSC Estimates derived using SEDAR best practices (SEDAR-PW-07):
  - The MRFSS survey began in wave2 of 1981. To fill-in this (1981 wave1) MRIP data gap, the average wave1 catch in years 1982-1984 was applied to that in 1981. MRIP sampling is not conducted in wave1 north of Florida because fishing effort is generally very low. Wave1 catch in 1981 is therefore assumed negligible in these states and was not imputed.
  - To ensure sampling can support MRIP estimates at finer stratifications than for which the survey was designed, (sub-state) domain estimates are only generated for established geographic domains. For Florida, this includes the sub-state domains of Florida in the FHS (4 = southeastern Florida, Miami-Dade to Indian River; 5 = northeastern Florida, Brevard to Nassau). For North Carolina, this includes domains north and south of Cape Hatteras.

- Between 1981 and 1985 in the South Atlantic, MRIP charter and headboat modes were combined into a single (for-hire) mode for estimation purposes. Since the NMFS Southeast Region Headboat Survey (SRHS) began in 1981 in the South Atlantic, the MRIP combined for-hire mode must be split to avoid double counting of estimated headboat landings in these early years. Estimates for the MRIP for-hire mode (1981-1985) were split using a ratio of SRHS headboat angler trip estimates to MRIP charterboat angler trip estimates for 1986-1990, calculated by state (or state equivalent to match SRHS areas to MRIP states).