General Recreational Survey Data for Gray Triggerfish in the South Atlantic

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SEDAR82-DW09

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

As part of the SEDAR stock assessment process, the data/estimates provided in this working paper may be updated based on discussions and recommendations of the Recreational Working Group. Please refer to the recreational section (#4) of the Data Workshop report for details on those estimates ultimately used in this assessment.

Parameters for data prepared for SEDAR 82 recreational catch data:

- Species: Gray Triggerfish
  - In accordance with SEDAR 41, 94% of the catch of unidentified triggerfish was assumed composed of gray triggerfish. In support of this decision, this report provides the relative catch of gray triggerfish to other triggerfish species by year and across years (Table 17, Figure 8).

- Year Range: 1981 - 2021
  - Although 2020 is the terminal year for this assessment, 2021 estimates are also provided as they are final and complete.
- Geographic Range: Atlantic states from Maine to eastern Florida, including the Florida Keys.
- Fishing Modes: Charter, Private, Shore, Headboat (Virginia to Maine)
  - In the North and Mid-Atlantic, from 1981 to 2003, headboats and charterboats were combined into a single for-hire mode. Beginning in 2004, with the implementation of the FHS in these regions, separate and more accurate estimates of effort are provided for each of these modes.
- 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 82 gray triggerfish, this includes any weights heavier than 14.2065 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.

- 1997 landings estimate: 558,923 fish
  - Strata: New Jersey, combined Cbt/Hbt, wave 4, and ocean > 3 miles
  - Intercept Records: a total of 5 angler trips that resulted in a landings estimate of 403,170 fish. Note that these 5 trips constituted a single fishing party.
    - Two angler trips that harvested 10 Gray Triggerfish (*NOT* seen by interviewer)

- One angler trip that harvested 10 Gray Triggerfish (*NOT* seen by interviewer) and released 2 live Gray Triggerfish
- One angler trip that harvested 11 Gray Triggerfish (*NOT* seen by interviewer)
- One angler trip that harvested 9 Gray Triggerfish (seen by interviewer)

- 2016 discard estimate: 2,551,708 fish

  - Strata: eastern Florida, private, wave 6, and ocean <= 3 miles
  - Intercept Records: a total of 10 angler trips that resulted in a landings/discard estimate of 837,965 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	1.38	10
Harvest not seen by interviewer	0	0	0.2	2
Released live fish	0	4	5.4	20

  - Strata: eastern Florida, private, wave 6, and ocean > 3 miles
  - Intercept Records: a total of 10 angler trips that resulted in a landings/discard estimate of 260,000 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.60	5
Harvest not seen by interviewer	0	0	0.1	1
Released live fish	0	3	7.3	20

  - Strata: eastern Florida, private, wave 4, and ocean > 3 miles
  - Intercept Records: a total of 27 angler trips that resulted in a landings/discard estimate of 436,553 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	1.67	29
Harvest not seen by interviewer	0	0	0.11	2
Released live fish	0	1	2.63	15

Tables

Table 1. Annual landings (AB1) and discards (B2) of Gray Triggerfish in numbers of fish by state and year (MRIP).

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

Table 3. Gray Triggerfish 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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.

Table 4. Gray Triggerfish 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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.

Table 5. Gray Triggerfish 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 Gray Triggerfish.

Table 6. Estimated landings of Gray Triggerfish 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, Appendix A).

Table 7. Gray Triggerfish 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). MRIP Headboat estimates are included from Virginia to Maine.

Table 8. Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish 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.

Table 9. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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.

Table 10. Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.

Table 11. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.

Table 12. Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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 Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.

Table 14. Resolution of landings-in-weight estimates (pounds whole weight) for South Atlantic Gray Triggerfish 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, Appendix A). 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 Gray Triggerfish.

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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.

Table 17. Catch estimates for the South Atlantic leatherjacket family (UNID CATCH) and estimates of the relative contribution of gray triggerfish to this catch (Ratio). Ratios are the average catch of gray triggerfish relative to all triggerfish species (gray triggerfish, ocean triggerfish, queen triggerfish) and are provided for individual years (1981-2021) and across all years (Grand Total).

Figures

Figure 1. Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Gray Triggerfish 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 Gray Triggerfish in the Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure do not include the Florida Keys as that domain is not available from the MRIP online comparison tool (NMFS).

Figure 3. Comparison of total general recreational landings (AB1) and discard estimates (B2) for South Atlantic gray triggerfish between SEDAR 82 and SEDAR 41, the terminal years of which are 2021 and 2014 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 Gray Triggerfish landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2021 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states contributed less than ten percent to the total catch (Fig4a) and were combined for plotting purposes.

Figure 4a. Percent of Gray Triggerfish 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). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states were combined for plotting purposes.

Figure 5. Annual Gray Triggerfish landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.

Figure 5a. Percent of Gray Triggerfish 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). MRIP Headboat estimates are included from Virginia to Maine.

Figure 6. Estimates of annual landings for Gray Triggerfish 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, Appendix A).

Figure 7. Annual landings estimates of South Atlantic Gray Triggerfish 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. Annual landings estimates for all South Atlantic triggerfish species in thousands of fish (MRIP). Landings are summarized by year and provided (A) in absolute units and (B) as a percentage of the total landings.

Figure 9. COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic gray triggerfish. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020-2021 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 2020-2021), in raw 2020-2021 APAIS data, and in 2020-2021 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 Gray Triggerfish in numbers of fish by state and year (MRIP).*

	FLKeys		FLE		GA		SC		NC		VA		MD	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	122,315	7,869	69,908	97,387	0	0	1,056	0	3,414	0	0	0	0	0
1982	10,142	13,959	77,955	32,776	0	0	3,076	0	0	0	0	0	0	0
1983	209	16,945	75,666	444,119	0	0	77	0	0	0	360	0	81	0
1984	16,016	67,994	198,925	9,783	52	0	5,049	0	1,758	0	513	0	0	0
1985	1,493	384	89,401	99,005	343	0	2,113	412	4,588	139	205	163	0	0
1986	0	1,987	48,557	286,519	375	0	306	0	2,405	0	8,566	1,434	0	0
1987	6,733	120,695	63,025	114,476	856	135	292	0	4,399	0	1,894	0	0	2,337
1988	47,215	38,129	106,110	99,946	0	0	597	1,956	6,713	2,040	0	0	0	0
1989	6,744	145,371	205,948	445,770	324	0	7,363	0	8,228	0	1,007	0	4,065	0
1990	3,359	0	158,267	99,223	3,022	1,535	62	0	19,606	2,458	1,444	5,278	6,158	50,476
1991	186,445	149,930	367,132	656,979	2,739	0	14,542	170	6,227	0	1,383	12,845	11,758	0
1992	27,108	24,628	194,313	345,831	7,796	244	7,912	0	24,980	242	10,836	0	1,163	785
1993	6,010	19,681	111,914	77,828	9,794	1,360	1,181	0	86,608	19,526	25,008	14,359	0	0
1994	7,172	40,837	67,314	91,190	4,244	0	491	0	38,876	692	1,071	2,805	2,429	0
1995	10,052	74,798	40,288	90,376	6,299	0	266	0	21,786	1,273	2,805	0	8,401	8,395
1996	10,508	21,102	54,537	173,141	19,743	2,663	2,593	0	30,723	3,681	14,971	4,036	31,989	23,202
1997	21,345	2,747	48,187	116,711	8,058	0	2,795	465	33,441	3,757	1,597	0	12,856	0
1998	7	6,306	57,338	55,757	7,507	0	3,265	0	11,181	5,503	1,344	0	4,732	0
1999	16,301	8,281	78,612	134,614	1,154	325	11,976	206	11,717	8,828	367	765	0	0
2000	5,473	175	75,674	149,329	697	14,304	4,258	12,395	13,412	2,906	3,456	1,155	2,000	7,846
2001	178	4,659	48,815	88,512	3,030	0	3,264	1,238	38,640	10,389	2,052	1,355	0	0
2002	219	1,678	156,469	235,247	5,712	4,368	1,485	0	27,478	1,113	18,141	3,506	4,350	0
2003	3,309	3,049	164,947	314,215	9,039	817	5,937	0	34,056	9,908	11,373	12,943	60	0
2004	483	33,276	149,768	257,123	19,721	4,277	10,213	0	22,250	5,877	18,686	19,203	1,623	6
2005	10,200	7,809	103,490	238,392	10,599	11,469	1,170	786	18,469	18,441	31,583	0	32,218	0
2006	50,559	12,385	174,784	263,229	7,306	330	924	0	19,668	6,921	2,483	4,080	145	0
2007	50,005	40,149	218,863	360,158	37,032	4,356	12,513	29	70,601	13,841	10,421	26,748	886	0
2008	104	34,029	165,178	247,169	11,159	4,299	50,508	651	95,086	8,821	10,240	566	0	0
2009	38,297	7,165	242,555	399,726	733	21	11,128	1,642	145,344	23,042	5,587	27,041	91,801	6,724
2010	17,955	17,031	195,802	207,807	6,469	1,101	3,828	355	93,598	21,647	6,334	400	150	0
2011	6,465	9,593	155,709	121,233	1,154	0	3,637	547	47,546	3,063	33	1,484	34	0

	FLKeys		FLE		GA		SC		NC		VA		MD	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2012	3,184	6,434	105,504	174,789	5,825	1,306	1,411	130	78,767	7,683	11,221	132	4,400	0
2013	12,735	22,598	156,664	271,738	16,014	788	3,902	0	76,511	24,075	10,850	0	39	0
2014	43,712	101,453	308,533	303,771	3,177	0	13,987	3,297	41,043	11,282	3,483	4,794	21,412	15
2015	10,198	21,069	116,702	503,492	574	5,977	28,247	5,917	33,201	1,292	2,019	6,223	11	996
2016	5,871	38,613	636,514	2,329,661	401	0	7,464	7,407	74,732	121,678	2,265	40	123	0
2017	7,422	13,887	188,216	574,655	6,959	53,416	6,958	0	211,500	59,231	18,023	5,235	2,850	3
2018	312	27,675	143,548	579,663	5,152	334	9,793	1,870	93,053	6,207	25,264	12,022	465	18,601
2019	7,149	32,909	201,593	212,825	10,277	23,262	22,118	104,753	63,720	107,269	4,283	1,207	42,329	9,325
2020	17,034	7,546	171,152	211,627	8,760	21	48,147	15,714	107,415	12,461	5,963	1,084	3,266	6,698
2021	45	7,615	390,442	549,038	749	3,990	13,199	940	60,088	46,438	29,286	19,576	19,509	317

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

	DE		NJ		NY		CT		RI		MA		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	0	0	0	0	0	0	0	0	0	0	0	0	196,693	105,256
1982	0	0	507	0	0	0	0	0	0	0	0	0	91,680	46,734
1983	3,517	0	45,743	0	0	0	0	0	0	0	1,712	0	127,365	461,064
1984	0	0	0	0	0	0	671	0	1,886	0	0	0	224,870	77,778
1985	0	0	5,521	0	0	0	0	0	0	0	0	0	103,664	100,103
1986	7,940	0	1,013	0	0	0	0	0	5,067	0	0	0	74,231	289,939
1987	0	0	1,945	0	66,517	5,978	0	0	0	0	0	0	145,661	243,621
1988	0	0	0	0	1,848	0	0	0	0	0	0	0	162,483	142,071
1989	137	0	18,954	0	33,557	6,295	953	0	1,478	451	0	0	288,759	597,886
1990	845	0	8,959	4,217	31,876	3,485	866	0	0	0	0	0	234,466	166,672
1991	2,365	0	34,162	1,132	8,253	1,214	0	0	1,139	752	0	927	636,145	823,949
1992	4,579	190	1,892	5,678	2,883	1,316	0	0	1,813	0	0	0	285,276	378,913
1993	3,952	0	27,283	967	7,954	363	0	0	490	336	0	465	280,195	134,885
1994	224	0	0	0	51,508	9,069	0	0	272	0	1,587	918	175,188	145,511

	DE		NJ		NY		CT		RI		MA		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1995	1,477	0	29,533	0	19,282	0	0	0	0	437	0	0	140,189	175,279
1996	4,657	1,975	57,482	45,043	2,924	8,061	0	0	5,650	0	766	0	236,543	282,902
1997	7,392	11,731	414,716	15,979	5,909	10,564	0	0	2,627	0	0	3,212	558,923	165,166
1998	3,489	2,054	6,393	6,078	8,747	0	0	0	1,643	5,376	0	238	105,647	81,312
1999	625	0	594	146	0	0	0	0	0	2,266	0	0	121,346	155,430
2000	4,572	721	17,747	1,323	1,437	18	0	0	0	0	0	0	128,726	190,171
2001	5,267	2,375	8,558	9,619	18,362	9,473	0	0	0	0	0	0	128,166	127,620
2002	6,353	1,210	9,928	349	30,531	9,164	0	0	2,371	0	0	0	263,037	256,634
2003	3,165	0	6,866	0	5,440	0	0	0	4,618	2,238	0	0	248,810	343,170
2004	20,606	14,341	65,694	737	16,547	1,155	0	1,637	0	0	9,189	0	334,777	337,632
2005	2,740	2,539	9,583	434	35,006	0	0	0	2	665	0	0	255,061	280,534
2006	3,807	745	0	0	567	0	0	0	0	0	0	0	260,242	287,690
2007	18,003	5,655	26,183	52,873	6,697	1,006	0	0	54	0	2,902	0	454,161	504,816
2008	1,747	624	1,484	0	626	0	0	0	0	0	0	1,623	336,133	297,782
2009	16,028	768	26,614	8,308	27,513	31,608	0	0	549	0	0	292	606,149	506,336
2010	2,995	78	47,355	27,279	18,853	42,137	0	0	14	0	14	0	393,366	317,836
2011	52	5,506	25,326	0	528	7,037	0	0	0	0	1,453	0	241,936	148,464
2012	2,428	33	105,378	395	6,582	0	0	0	1,382	17,804	0	0	326,081	208,705
2013	17,538	7,004	7,372	0	11,381	14,526	32	142	650	6,286	1,033	8,997	314,722	356,152
2014	13,470	8	75,841	8,479	42,850	1,108	0	0	4,164	0	0	6,131	571,672	440,336
2015	1,577	1,893	16,001	0	7,170	12,961	144	7,430	11,181	2,837	3	0	227,029	570,087
2016	853	0	52,730	45,818	14,226	7,844	0	0	4,841	647	0	0	800,018	2,551,708
2017	9,000	1,218	42,059	1,313	35,342	14,818	3,129	0	3,720	53	1,803	49	536,982	723,879
2018	6,601	3,005	92,285	8,155	10,289	1,326	464	0	11,957	682	245	1,125	399,427	660,663
2019	11,160	283	77,730	32,617	8,076	0	3,043	0	146	1,888	921	0	452,546	526,339
2020	2,255	1,897	230,950	103,163	15,211	2,170	175	0	681	3,315	0	0	611,008	365,696
2021	9,176	2	36,211	15,870	25,536	1,359	1,963	279	2,562	4,832	0	584	588,765	650,839

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

	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	6,178	3,107	0	0			179,928	91,477	10,588	10,673	196,693	105,256
1982	11,818	1,418	507	0			49,992	15,494	29,364	29,823	91,680	46,734
1983	5,712	3,061	441	0			71,284	51,923	49,928	406,080	127,365	461,064
1984	11,280	4,387	0	0			121,711	73,390	91,879	0	224,870	77,778
1985	6,840	2,454	5,565	163			85,585	77,187	5,674	20,299	103,664	100,103
1986	419	113	1,885	0			71,927	100,761	0	189,065	74,231	289,939
1987	698	0	1,945	0			102,303	120,955	40,715	122,666	145,661	243,621
1988	1,759	5,572	0	0			96,496	105,671	64,228	30,827	162,483	142,071
1989	6,937	216	17,447	0			224,810	278,860	39,565	318,810	288,759	597,886
1990	5,591	0	3,885	237			208,339	146,658	16,652	19,776	234,466	166,672
1991	7,259	319	5,895	1,132			287,192	245,255	335,799	577,243	636,145	823,949
1992	18,935	900	744	785			143,987	114,652	121,610	262,576	285,276	378,913
1993	16,090	0	24,190	465			145,819	107,721	94,096	26,699	280,195	134,885
1994	25,850	617	1,959	281			94,135	122,612	53,243	22,000	175,188	145,511
1995	14,951	1,035	1,430	21			102,631	156,975	21,178	17,248	140,189	175,279
1996	17,424	823	1,505	70			170,745	130,493	46,869	151,516	236,543	282,902
1997	33,321	3,630	405,806	15,979			94,656	127,406	25,140	18,151	558,923	165,166
1998	10,308	0	1,546	0			76,105	68,127	17,688	13,185	105,647	81,312
1999	14,805	4,507	1,099	146			101,756	125,850	3,686	24,927	121,346	155,430
2000	6,019	850	729	1,351			86,116	149,181	35,863	38,790	128,726	190,171
2001	14,001	1,897	954	43			105,250	101,587	7,960	24,092	128,166	127,620
2002	39,499	14,200	9,426	353			172,225	206,212	41,888	35,869	263,037	256,634
2003	29,627	4,511	3,998	0			202,242	321,359	12,943	17,300	248,810	343,170
2004	37,854	11,834			11,852	6	266,934	280,979	18,137	44,813	334,777	337,632
2005	22,196	10,350			277	0	188,989	244,563	43,599	25,621	255,061	280,534
2006	22,455	9,584			202	0	235,475	260,334	2,109	17,772	260,242	287,690
2007	89,125	13,591			12,871	0	338,664	449,594	13,501	41,632	454,161	504,816
2008	27,255	13,412			1,747	0	300,048	242,119	7,083	42,251	336,133	297,782
2009	35,164	11,736			6,933	702	459,429	421,220	104,623	72,678	606,149	506,336
2010	45,646	7,852			1,521	0	321,238	255,617	24,962	54,367	393,366	317,836

	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2011	27,008	6,495			1,504	46	207,838	126,342	5,587	15,580	241,936	148,464
2012	51,179	4,714			2,500	543	209,598	107,914	62,803	95,535	326,081	208,705
2013	38,717	15,550			754	121	245,333	304,324	29,918	36,157	314,722	356,152
2014	48,244	17,848			2,774	22	428,267	388,695	92,386	33,771	571,672	440,336
2015	59,002	20,990			6,362	996	147,424	480,820	14,242	67,281	227,029	570,087
2016	16,414	16,598			10,551	40	723,301	1,968,173	49,752	566,897	800,018	2,551,708
2017	68,515	31,095			9,683	1,425	442,242	632,403	16,543	58,956	536,982	723,879
2018	67,281	16,695			5,839	588	255,552	598,478	70,754	44,902	399,427	660,663
2019	72,077	28,952			4,259	37	343,459	323,982	32,750	173,369	452,546	526,339
2020	92,857	13,505			7,486	608	495,593	339,870	15,071	11,713	611,008	365,696
2021	43,200	9,250			6,427	486	528,713	587,202	10,425	53,901	588,765	650,839

Table 3. *Gray Triggerfish 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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	6,177	0.61	63 (5)	583 (7)	0	0.00	395 (0)	3,760 (0)					179,927	0.71	862 (8)	7,141 (8)	10,587	1.00	1,098 (1)	6,502 (1)
1982	11,817	0.58	57 (4)	520 (10)	506	1.00	210 (1)	2,203 (1)					49,991	0.50	1,163 (5)	9,977 (10)	29,363	0.59	1,435 (3)	10,047 (3)
1983	5,712	0.54	169 (9)	1,886 (13)	441	0.00	368 (0)	4,395 (0)					71,283	0.41	1,119 (7)	10,422 (7)	49,928	0.81	1,640 (2)	11,648 (2)
1984	11,279	0.34	226 (17)	2,592 (40)	0	0.00	284 (0)	3,422 (0)					121,711	0.45	859 (9)	7,421 (9)	91,878	0.73	1,331 (3)	10,101 (3)
1985	6,840	0.46	161 (8)	1,625 (14)	5,565	0.99	420 (2)	4,713 (3)					85,585	0.69	1,410 (6)	11,321 (13)	5,674	1.00	1,993 (1)	13,207 (1)
1986	419	0.78	249 (2)	2,260 (2)	1,885	0.98	638 (3)	6,191 (3)					71,926	0.36	2,310 (23)	18,463 (25)	0	0.00	1,060 (0)	6,080 (0)
1987	697	0.56	396 (7)	3,626 (7)	1,944	1.00	427 (1)	3,699 (1)					102,303	0.44	2,245 (18)	19,392 (21)	40,715	0.87	1,241 (2)	7,708 (3)
1988	1,759	0.60	422 (12)	3,560 (12)	0	0.00	580 (0)	5,424 (0)					96,495	0.53	2,570 (18)	21,216 (26)	64,227	0.66	1,856 (3)	11,909 (4)
1989	6,937	0.54	447 (12)	4,258 (12)	17,446	0.73	907 (12)	9,015 (15)					224,809	0.38	3,226 (37)	26,633 (52)	39,565	0.52	2,289 (4)	15,793 (4)
1990	5,590	0.47	323 (15)	3,440 (17)	3,884	0.75	798 (6)	6,705 (8)					208,338	0.24	3,544 (44)	31,626 (52)	16,652	0.69	1,905 (3)	13,545 (4)
1991	7,259	0.35	409 (23)	4,108 (26)	5,894	0.56	852 (10)	7,264 (16)					287,191	0.40	3,586 (42)	32,572 (58)	335,798	0.61	2,466 (5)	20,076 (7)
1992	18,935	0.27	561 (42)	5,127 (70)	744	0.36	805 (8)	6,758 (8)					143,986	0.19	4,089 (58)	36,793 (70)	121,610	0.51	2,420 (10)	19,845 (13)
1993	16,090	0.33	400 (24)	4,334 (32)	24,189	0.89	695 (7)	5,816 (9)					145,818	0.24	3,731 (47)	32,598 (57)	94,095	0.73	3,074 (7)	24,985 (9)
1994	25,850	0.26	491 (51)	6,263 (60)	1,959	0.70	708 (5)	5,635 (9)					94,135	0.24	3,980 (40)	35,419 (48)	53,243	0.43	3,368 (10)	28,279 (12)
1995	14,950	0.24	459 (33)	5,646 (42)	1,429	0.63	653 (6)	5,262 (10)					102,631	0.25	3,626 (30)	31,816 (35)	21,177	0.46	3,282 (8)	28,554 (9)
1996	17,424	0.28	640 (35)	8,359 (46)	1,505	0.46	693 (9)	5,343 (13)					170,744	0.33	3,630 (40)	33,404 (51)	46,869	0.48	2,763 (9)	25,394 (10)
1997	33,320	0.36	806 (37)	9,062 (48)	405,806	0.99	821 (7)	6,318 (20)					94,656	0.27	3,896 (36)	36,120 (43)	25,139	0.51	3,028 (6)	25,135 (6)

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1998	10,308	0.31	912 (37)	9,812 (44)	1,545	0.93	950 (3)	6,797 (7)					76,105	0.41	3,816 (26)	35,348 (31)	17,687	0.61	2,975 (3)	25,343 (4)
1999	14,804	0.37	998 (37)	9,372 (52)	1,098	0.59	764 (4)	6,162 (6)					101,756	0.21	3,663 (50)	35,912 (55)	3,685	1.00	3,236 (1)	26,716 (1)
2000	6,018	0.34	1,065 (27)	11,745 (33)	728	0.61	799 (6)	5,739 (6)					86,115	0.32	3,670 (29)	34,933 (31)	35,862	0.58	2,934 (6)	23,678 (6)
2001	14,000	0.25	950 (54)	11,686 (64)	954	0.48	932 (9)	7,950 (12)					105,250	0.25	4,312 (45)	44,776 (54)	7,960	0.58	3,291 (3)	28,011 (3)
2002	39,498	0.20	1,002 (83)	11,144 (108)	9,425	0.57	864 (13)	6,873 (29)					172,224	0.22	3,928 (63)	39,800 (67)	41,888	0.80	3,384 (4)	28,067 (4)
2003	29,627	0.26	883 (78)	10,036 (123)	3,998	0.57	1,452 (9)	12,629 (13)					202,242	0.31	4,301 (56)	38,571 (64)	12,942	0.47	3,672 (6)	26,963 (6)
2004	37,853	0.17	1,286 (99)	11,755 (158)					11,852	0.59	875 (13)	9,341 (25)	266,934	0.29	3,203 (54)	30,653 (67)	18,136	0.86	2,269 (3)	19,356 (3)
2005	22,196	0.30	1,616 (63)	13,984 (101)					277	0.58	982 (9)	10,960 (11)	188,988	0.25	2,815 (46)	27,351 (60)	43,598	0.72	2,090 (4)	17,424 (4)
2006	22,455	0.31	1,460 (60)	11,731 (79)					202	0.39	890 (10)	8,658 (13)	235,475	0.30	3,213 (61)	32,305 (72)	2,109	0.80	1,983 (2)	16,522 (2)
2007	89,124	0.31	1,497 (79)	11,975 (115)					12,871	0.55	642 (29)	8,179 (66)	338,663	0.20	3,467 (84)	33,387 (98)	13,501	0.49	2,181 (6)	18,999 (7)
2008	27,255	0.36	1,596 (57)	12,561 (69)					1,746	0.55	677 (7)	8,780 (14)	300,048	0.23	3,280 (67)	31,832 (84)	7,082	0.62	2,188 (3)	19,024 (3)
2009	35,163	0.23	1,432 (79)	10,280 (114)					6,933	0.34	656 (21)	7,426 (63)	459,429	0.20	3,224 (87)	29,728 (117)	104,622	0.46	2,075 (10)	16,538 (13)
2010	45,645	0.32	1,614 (96)	12,544 (131)					1,520	0.52	676 (9)	8,380 (10)	321,238	0.21	3,662 (73)	33,617 (90)	24,962	0.67	2,562 (4)	20,770 (4)
2011	27,007	0.29	1,448 (56)	10,926 (72)					1,503	0.45	626 (12)	7,617 (20)	207,838	0.27	3,383 (47)	29,880 (62)	5,586	0.72	2,637 (2)	19,804 (2)
2012	51,179	0.28	1,334 (85)	10,734 (104)					2,500	0.44	477 (13)	5,804 (23)	209,598	0.28	3,500 (57)	31,978 (69)	62,803	0.56	2,810 (6)	20,920 (6)
2013	38,717	0.31	683 (46)	4,402 (59)					753	0.64	609 (7)	7,729 (8)	245,332	0.22	3,466 (84)	28,158 (117)	29,918	0.41	2,168 (12)	18,407 (14)
2014	48,244	0.22	1,248 (97)	9,045 (133)					2,773	0.46	546 (17)	7,301 (37)	428,267	0.22	3,911 (84)	31,566 (100)	92,386	0.81	1,903 (7)	16,889 (8)
2015	59,001	0.40	1,283 (80)	8,920 (93)					6,361	0.82	532 (10)	7,295 (21)	147,424	0.22	4,089 (57)	33,191 (68)	14,241	0.55	1,964 (5)	16,676 (5)
2016	16,414	0.20	1,397 (73)	9,671 (89)					10,550	0.57	572 (17)	8,697 (34)	723,301	0.41	3,968 (67)	29,776 (89)	49,752	0.59	2,534 (9)	16,344 (10)
2017	68,514	0.23	1,372 (78)	9,953 (98)					9,682	0.52	507 (29)	7,349 (92)	442,241	0.19	4,154 (94)	34,288 (118)	16,542	0.45	2,731 (8)	17,528 (9)

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2018	67,281	0.29	1,609 (96)	12,817 (120)					5,839	0.34	512 (30)	8,143 (101)	255,552	0.22	4,140 (88)	34,872 (111)	70,753	0.43	2,745 (9)	19,372 (14)
2019	72,077	0.20	1,622 (97)	11,697 (121)					4,259	0.39	503 (21)	8,602 (70)	343,459	0.27	4,201 (74)	35,234 (87)	32,750	0.73	2,781 (5)	19,095 (7)
2020	92,857	0.19	1,920 (124)	14,653 (179)					7,486	0.24	960 (51)	16,264 (171)	495,592	0.36	5,251 (68)	44,741 (81)	15,071	0.53	3,487 (4)	23,325 (6)
2021	43,200	0.23	2,067 (111)	15,930 (148)					6,427	0.44	631 (20)	10,794 (102)	528,713	0.28	5,153 (94)	41,678 (126)	10,424	0.86	3,490 (4)	22,105 (4)

Table 4. *Gray Triggerfish 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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	3,106	1.00	63 (1)	583 (1)	0	0.00	395 (0)	3,760 (0)					91,476	0.61	862 (3)	7,141 (3)	10,672	1.00	1,098 (1)	6,502 (1)
1982	1,418	1.00	57 (1)	520 (1)	0	0.00	210 (0)	2,203 (0)					15,493	0.00	1,163 (0)	9,977 (0)	29,822	0.71	1,435 (2)	10,047 (3)
1983	3,060	0.71	169 (2)	1,886 (2)	0	0.00	368 (0)	4,395 (0)					51,922	0.75	1,119 (2)	10,422 (2)	406,080	0.00	1,640 (0)	11,648 (0)
1984	4,387	0.75	226 (4)	2,592 (4)	0	0.00	284 (0)	3,422 (0)					73,390	1.00	859 (1)	7,421 (1)	0	0.00	1,331 (0)	10,101 (0)
1985	2,453	0.66	161 (5)	1,625 (6)	163	0.00	420 (0)	4,713 (0)					77,187	0.79	1,410 (3)	11,321 (4)	20,299	0.71	1,993 (2)	13,207 (2)
1986	112	1.00	249 (1)	2,260 (1)	0	0.00	638 (0)	6,191 (0)					100,761	0.30	2,310 (22)	18,463 (29)	189,065	0.78	1,060 (3)	6,080 (5)
1987	0	0.00	396 (0)	3,626 (0)	0	0.00	427 (0)	3,699 (0)					120,955	0.41	2,245 (14)	19,392 (23)	122,665	0.83	1,241 (2)	7,708 (2)

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1988	5,572	1.00	422 (1)	3,560 (1)	0	0.00	580 (0)	5,424 (0)					105,671	0.35	2,570 (22)	21,216 (35)	30,827	1.00	1,856 (1)	11,909 (1)
1989	216	0.00	447 (0)	4,258 (0)	0	0.00	907 (0)	9,015 (0)					278,860	0.29	3,226 (28)	26,633 (54)	318,809	0.52	2,289 (6)	15,793 (6)
1990	0	0.00	323 (0)	3,440 (0)	237	0.00	798 (0)	6,705 (0)					146,658	0.37	3,544 (24)	31,626 (35)	19,775	1.00	1,905 (1)	13,545 (1)
1991	318	0.63	409 (3)	4,108 (3)	1,132	0.87	852 (2)	7,264 (4)					245,254	0.22	3,586 (42)	32,572 (83)	577,242	0.67	2,466 (8)	20,076 (12)
1992	899	0.75	561 (3)	5,127 (4)	785	1.00	805 (1)	6,758 (1)					114,652	0.18	4,089 (42)	36,793 (74)	262,575	0.32	2,420 (13)	19,845 (16)
1993	0	0.00	400 (0)	4,334 (0)	465	1.00	695 (1)	5,816 (1)					107,720	0.25	3,731 (28)	32,598 (38)	26,698	0.71	3,074 (3)	24,985 (8)
1994	617	0.81	491 (3)	6,263 (3)	280	1.00	708 (2)	5,635 (2)					122,612	0.38	3,980 (27)	35,419 (40)	22,000	0.44	3,368 (8)	28,279 (9)
1995	1,034	0.92	459 (2)	5,646 (5)	20	1.00	653 (1)	5,262 (2)					156,975	0.32	3,626 (19)	31,816 (35)	17,247	0.59	3,282 (5)	28,554 (5)
1996	822	0.63	640 (4)	8,359 (8)	70	1.00	693 (1)	5,343 (1)					130,493	0.24	3,630 (27)	33,404 (41)	151,516	0.55	2,763 (10)	25,394 (17)
1997	3,630	0.78	806 (3)	9,062 (6)	15,979	1.00	821 (1)	6,318 (1)					127,406	0.35	3,896 (27)	36,120 (49)	18,150	0.67	3,028 (4)	25,135 (6)
1998	0	0.00	912 (0)	9,812 (0)	0	0.00	950 (0)	6,797 (0)					68,126	0.28	3,816 (24)	35,348 (35)	13,184	0.55	2,975 (4)	25,343 (4)
1999	4,506	0.45	998 (9)	9,372 (20)	146	1.00	764 (1)	6,162 (1)					125,849	0.24	3,663 (39)	35,912 (54)	24,927	0.54	3,236 (5)	26,716 (5)
2000	850	0.60	1,065 (4)	11,745 (6)	1,350	0.71	799 (4)	5,739 (5)					149,180	0.24	3,670 (33)	34,933 (48)	38,789	0.67	2,934 (4)	23,678 (4)
2001	1,897	0.31	950 (18)	11,686 (40)	43	0.86	932 (2)	7,950 (2)					101,587	0.23	4,312 (35)	44,776 (60)	24,091	0.48	3,291 (6)	28,011 (6)
2002	14,200	0.46	1,002 (24)	11,144 (49)	352	0.99	864 (2)	6,873 (2)					206,211	0.23	3,928 (63)	39,800 (127)	35,869	1.00	3,384 (1)	28,067 (1)
2003	4,511	0.36	883 (24)	10,036 (56)	0	0.00	1,452 (0)	12,629 (0)					321,359	0.26	4,301 (63)	38,571 (107)	17,299	0.73	3,672 (3)	26,963 (6)
2004	11,833	0.26	1,286 (30)	11,755 (95)					6	1.00	875 (1)	9,341 (1)	280,979	0.24	3,203 (54)	30,653 (107)	44,812	0.82	2,269 (3)	19,356 (4)
2005	10,350	0.31	1,616 (28)	13,984 (84)					0	0.00	982 (0)	10,960 (0)	244,562	0.21	2,815 (54)	27,351 (98)	25,621	0.63	2,090 (6)	17,424 (9)
2006	9,584	0.31	1,460 (23)	11,731 (90)					0	0.00	890 (0)	8,658 (0)	260,333	0.26	3,213 (63)	32,305 (117)	17,771	1.00	1,983 (1)	16,522 (1)

	Cbt				CbtHbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
2007	13,590	0.33	1,497 (24)	11,975 (66)					0	0.00	642 (0)	8,179 (0)	449,594	0.20	3,467 (82)	33,387 (147)	41,631	0.61	2,181 (7)	18,999 (9)
2008	13,412	0.35	1,596 (27)	12,561 (66)					0	0.00	677 (0)	8,780 (0)	242,119	0.21	3,280 (71)	31,832 (125)	42,250	0.49	2,188 (6)	19,024 (11)
2009	11,735	0.44	1,432 (19)	10,280 (42)					701	0.51	656 (7)	7,426 (9)	421,220	0.41	3,224 (66)	29,728 (134)	72,678	0.52	2,075 (9)	16,538 (11)
2010	7,852	0.46	1,614 (20)	12,544 (53)					0	0.00	676 (0)	8,380 (0)	255,616	0.26	3,662 (56)	33,617 (103)	54,366	0.59	2,562 (5)	20,770 (5)
2011	6,495	0.48	1,448 (10)	10,926 (28)					46	1.00	626 (1)	7,617 (1)	126,342	0.25	3,383 (37)	29,880 (62)	15,580	0.77	2,637 (2)	19,804 (2)
2012	4,713	0.56	1,334 (12)	10,734 (21)					542	0.77	477 (3)	5,804 (4)	107,913	0.24	3,500 (35)	31,978 (72)	95,535	0.51	2,810 (10)	20,920 (12)
2013	15,550	0.58	683 (20)	4,402 (38)					121	1.00	609 (1)	7,729 (3)	304,323	0.33	3,466 (48)	28,158 (76)	36,156	0.57	2,168 (4)	18,407 (4)
2014	17,847	0.39	1,248 (39)	9,045 (81)					22	0.74	546 (2)	7,301 (2)	388,694	0.22	3,911 (70)	31,566 (118)	33,771	0.60	1,903 (5)	16,889 (5)
2015	20,989	0.27	1,283 (33)	8,920 (105)					996	1.00	532 (1)	7,295 (2)	480,819	0.26	4,089 (67)	33,191 (116)	67,281	0.37	1,964 (12)	16,676 (12)
2016	16,597	0.26	1,397 (33)	9,671 (120)					39	1.00	572 (1)	8,697 (1)	1,968,172	0.44	3,968 (65)	29,776 (118)	566,897	0.42	2,534 (16)	16,344 (29)
2017	31,094	0.32	1,372 (38)	9,953 (100)					1,425	0.92	507 (5)	7,349 (6)	632,403	0.26	4,154 (71)	34,288 (123)	58,956	0.55	2,731 (8)	17,528 (11)
2018	16,695	0.39	1,609 (30)	12,817 (57)					587	0.63	512 (6)	8,143 (9)	598,477	0.28	4,140 (55)	34,872 (98)	44,902	0.84	2,745 (2)	19,372 (3)
2019	28,951	0.30	1,622 (40)	11,697 (115)					36	1.00	503 (1)	8,602 (1)	323,981	0.32	4,201 (43)	35,234 (83)	173,368	0.45	2,781 (9)	19,095 (12)
2020	13,505	0.29	1,920 (44)	14,653 (108)					608	0.61	960 (7)	16,264 (10)	339,870	0.36	5,251 (45)	44,741 (75)	11,713	0.65	3,487 (5)	23,325 (6)
2021	9,250	0.28	2,067 (34)	15,930 (70)					485	0.72	631 (3)	10,794 (3)	587,201	0.27	5,153 (66)	41,678 (106)	53,901	0.76	3,490 (2)	22,105 (3)

Table 5. *Gray Triggerfish 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 Gray Triggerfish.*

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	196,693	0.66	2,418 (14)	17,986 (16)	105,256	0.52	2,418 (5)	17,986 (5)
1982	91,680	0.34	2,865 (13)	22,745 (24)	46,734	0.68	2,865 (3)	22,745 (4)
1983	127,365	0.39	3,296 (18)	28,351 (22)	461,063	0.71	3,296 (4)	28,351 (4)
1984	224,869	0.37	2,700 (29)	23,536 (52)	77,777	0.69	2,700 (5)	23,536 (5)
1985	103,664	0.57	3,984 (17)	30,866 (31)	100,103	0.63	3,984 (10)	30,866 (12)
1986	74,231	0.35	4,257 (28)	32,994 (30)	289,939	0.52	4,257 (26)	32,994 (35)
1987	145,660	0.40	4,309 (28)	34,425 (32)	243,621	0.38	4,309 (16)	34,425 (25)
1988	162,482	0.41	5,428 (33)	42,109 (42)	142,070	0.32	5,428 (24)	42,109 (37)
1989	288,759	0.35	6,869 (65)	55,699 (83)	597,886	0.27	6,869 (34)	55,699 (60)
1990	234,466	0.22	6,570 (68)	55,316 (81)	166,671	0.35	6,570 (25)	55,316 (36)
1991	636,144	0.38	7,313 (80)	64,020 (107)	823,948	0.47	7,313 (55)	64,020 (102)
1992	285,276	0.24	7,875 (118)	68,523 (161)	378,913	0.22	7,875 (59)	68,523 (95)
1993	280,194	0.28	7,900 (85)	67,733 (107)	134,884	0.26	7,900 (32)	67,733 (47)
1994	175,188	0.18	8,547 (106)	75,596 (129)	145,510	0.32	8,547 (40)	75,596 (54)
1995	140,189	0.19	8,020 (77)	71,278 (96)	175,278	0.27	8,020 (27)	71,278 (47)
1996	236,543	0.26	7,726 (93)	72,500 (120)	282,902	0.34	7,726 (42)	72,500 (67)
1997	558,923	0.73	8,551 (86)	76,635 (117)	165,166	0.30	8,551 (35)	76,635 (62)
1998	105,647	0.31	8,653 (69)	77,300 (86)	81,311	0.25	8,653 (28)	77,300 (39)
1999	121,345	0.19	8,661 (92)	78,162 (114)	155,429	0.21	8,661 (54)	78,162 (80)
2000	128,726	0.27	8,468 (68)	76,086 (76)	190,171	0.22	8,468 (45)	76,086 (63)
2001	128,165	0.21	9,485 (111)	92,423 (133)	127,619	0.20	9,485 (61)	92,423 (108)
2002	263,037	0.18	9,178 (163)	85,884 (208)	256,634	0.21	9,178 (90)	85,884 (179)
2003	248,810	0.25	10,308 (149)	88,199 (206)	343,169	0.25	10,308 (90)	88,199 (169)
2004	334,777	0.23	7,633 (169)	71,058 (253)	337,632	0.22	7,633 (88)	71,058 (207)
2005	255,061	0.23	7,503 (122)	69,670 (176)	280,534	0.18	7,503 (88)	69,670 (191)
2006	260,242	0.27	7,546 (133)	69,091 (166)	287,689	0.25	7,546 (87)	69,091 (208)
2007	454,161	0.16	7,787 (198)	72,396 (286)	504,816	0.18	7,787 (113)	72,396 (222)
2008	336,132	0.20	7,741 (134)	72,029 (170)	297,782	0.18	7,741 (104)	72,029 (202)
2009	606,148	0.17	7,387 (197)	63,816 (307)	506,335	0.35	7,387 (101)	63,816 (196)
2010	393,366	0.18	8,514 (182)	75,169 (235)	317,835	0.23	8,514 (81)	75,169 (161)
2011	241,936	0.23	8,094 (117)	68,123 (156)	148,463	0.23	8,094 (50)	68,123 (93)
2012	326,080	0.21	8,121 (161)	69,330 (202)	208,705	0.27	8,121 (60)	69,330 (109)
2013	314,722	0.18	6,926 (149)	58,696 (198)	356,152	0.29	6,926 (73)	58,696 (121)
2014	571,671	0.21	7,608 (205)	64,801 (278)	440,336	0.20	7,608 (116)	64,801 (206)
2015	227,029	0.18	7,868 (152)	66,082 (187)	570,086	0.22	7,868 (113)	66,082 (235)
2016	800,018	0.37	8,471 (166)	64,397 (222)	2,551,707	0.35	8,471 (115)	64,397 (268)
2017	536,981	0.16	8,764 (209)	69,050 (317)	723,879	0.23	8,764 (122)	69,050 (240)
2018	399,427	0.16	9,006 (223)	75,124 (346)	660,662	0.26	9,006 (93)	75,124 (167)
2019	452,546	0.21	9,107 (197)	74,563 (285)	526,338	0.25	9,107 (93)	74,563 (211)
2020	611,007	0.29	11,618 (247)	98,928 (437)	365,696	0.33	11,618 (101)	98,928 (199)

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
2021	588,765	0.24	11,341 (229)	90,448 (380)	650,838	0.26	11,341 (105)	90,448 (182)

Table 6. *Estimated landings of Gray Triggerfish 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, Appendix A).*

Year	FLKeys	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	RI	MA	Total
1981	290,613	233,955	0	3,770	12,240	0	0	0	0	0	0	0	0	540,579
1982	26,742	181,624	0	7,996	0	0	0	0	1,130	0	0	0	0	217,492
1983	423	100,018	0	122	0	803	181	7,844	102,006	0	0	0	3,944	215,341
1984	38,073	253,193	132	19,943	4,444	1,143	0	0	0	0	1,545	4,344	0	322,818
1985	4,055	66,493	668	7,062	8,928	456	0	0	12,311	0	0	0	0	99,975
1986	0	105,360	911	744	5,838	35,527	0	32,931	4,203	0	0	11,671	0	197,184
1987	16,477	97,819	1,705	582	8,844	5,165	0	0	5,303	180,585	0	0	0	316,480
1988	62,251	241,616	0	1,359	15,286	0	0	0	0	4,121	0	0	0	324,633
1989	9,063	321,038	893	27,163	31,214	3,075	12,412	420	57,878	95,799	2,196	3,404	0	564,556
1990	5,692	171,823	6,278	129	72,116	3,488	14,873	2,041	21,637	69,088	1,995	0	0	369,161
1991	556,809	782,332	7,122	37,815	18,065	3,448	29,316	5,898	77,492	20,576	0	2,623	0	1,541,496
1992	49,130	549,238	22,110	23,734	79,761	24,638	2,645	10,916	4,302	6,555	0	4,177	0	777,205
1993	10,172	171,732	36,476	2,638	144,517	41,158	0	6,903	47,653	13,893	0	1,129	0	476,270
1994	20,995	94,281	10,859	1,202	97,812	2,435	5,524	509	0	109,963	0	627	3,656	347,864
1995	14,086	67,637	12,063	532	45,761	6,220	18,631	3,277	65,498	42,765	0	0	0	276,470
1996	15,719	96,062	52,013	6,217	63,975	55,974	79,912	11,090	143,597	7,306	0	13,013	1,764	546,641
1997	35,670	71,278	25,032	8,669	81,646	3,860	31,073	22,981	870,784	14,282	0	6,051	0	1,171,326
1998	17	145,681	17,091	7,671	31,913	2,996	10,552	7,781	14,257	19,506	0	4,174	0	261,639
1999	35,191	178,466	2,963	31,184	32,389	819	0	1,393	1,324	0	0	0	0	283,727
2000	10,543	132,644	1,569	8,168	35,686	11,054	6,396	14,625	56,766	4,598	0	0	0	282,050
2001	268	124,042	7,402	6,445	104,087	4,483	0	11,505	18,694	40,107	0	0	0	317,032
2002	397	286,881	15,353	5,707	83,275	35,555	9,571	13,979	22,743	67,177	0	5,462	0	546,098
2003	5,804	341,990	19,977	13,606	89,732	25,205	134	7,014	15,216	12,056	0	10,637	0	541,372
2004	844	311,983	37,698	16,145	56,994	43,873	3,810	46,111	155,839	38,851	0	0	21,165	733,313
2005	17,578	215,970	24,639	2,738	57,023	72,625	69,643	6,501	20,715	75,668	0	6	0	563,104
2006	87,511	339,045	21,078	2,239	55,978	5,807	339	8,903	0	1,326	0	0	0	522,226
2007	90,137	458,414	77,044	24,852	126,607	24,171	2,076	42,872	55,225	14,804	0	124	6,685	923,011
2008	251	339,604	24,671	113,159	258,124	24,264	0	2,690	3,207	1,353	0	0	0	767,322
2009	109,316	521,906	1,780	26,272	328,300	11,287	171,557	23,437	58,208	48,308	0	1,265	0	1,301,635

Year	FLKeys	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	RI	MA	Total
2010	54,232	412,060	15,977	13,327	249,462	13,196	312	5,777	98,654	39,277	0	32	32	902,339
2011	18,014	408,528	2,718	8,106	107,014	89	92	142	72,768	1,442	0	0	3,347	622,262
2012	8,259	167,743	17,244	3,598	212,973	26,213	10,279	6,127	272,015	15,375	0	3,182	0	743,009
2013	43,776	324,881	53,267	8,524	152,895	23,910	79	36,412	14,981	23,127	74	1,497	2,380	685,803
2014	138,352	715,931	7,657	33,708	100,752	7,206	40,574	36,847	179,593	88,657	0	9,591	0	1,358,870
2015	23,807	308,299	1,408	85,227	88,708	4,496	25	3,510	33,992	15,961	332	25,755	7	591,527
2016	15,946	1,200,381	841	15,670	158,312	4,510	274	1,698	114,965	28,328	0	11,151	0	1,552,076
2017	18,385	407,398	14,327	14,325	395,518	33,608	5,317	16,109	81,906	67,833	5,068	6,416	3,110	1,069,322
2018	1,422	361,944	11,292	25,366	185,326	53,368	1,016	15,949	199,225	21,683	1,044	27,879	572	906,086
2019	41,667	473,580	23,168	62,666	133,804	10,279	67,301	35,044	191,319	21,527	7,009	336	2,122	1,069,821
2020	74,859	443,276	17,885	132,496	219,885	12,307	7,472	5,103	593,875	37,541	406	1,580	0	1,546,687
2021	197	1,069,259	1,835	33,769	132,096	52,238	43,337	24,133	81,470	63,661	7,010	9,149	0	1,518,152

Table 7. *Gray Triggerfish 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). MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV
1981	22,121	0.61	0	0.00			496,164	0.73	22,294	1.00	540,579	0.68
1982	24,956	0.58	1,130	1.00			134,437	0.51	56,969	0.78	217,492	0.36
1983	9,000	0.54	984	0.00			101,079	0.45	104,279	0.82	215,341	0.42
1984	30,956	0.41	0	0.00			156,481	0.49	135,381	0.74	322,818	0.42
1985	14,118	0.46	12,410	0.99			68,438	0.69	5,009	1.00	99,975	0.58
1986	992	0.82	7,819	0.98			188,372	0.38	0	0.00	197,184	0.37
1987	1,290	0.60	5,303	1.00			199,352	0.45	110,535	0.90	316,480	0.41
1988	4,006	0.60	0	0.00			174,379	0.56	146,248	0.66	324,633	0.44
1989	26,230	0.55	53,215	0.73			408,154	0.39	76,957	0.54	564,556	0.35
1990	21,752	0.48	9,342	0.75			287,104	0.25	50,964	0.70	369,161	0.23
1991	18,715	0.37	14,297	0.56			675,722	0.40	832,762	0.64	1,541,496	0.38
1992	56,653	0.28	1,722	0.41			367,795	0.20	351,035	0.52	777,205	0.24
1993	47,388	0.34	42,250	0.89			231,028	0.25	155,604	0.74	476,270	0.29
1994	61,563	0.26	4,184	0.70			172,720	0.26	109,397	0.45	347,864	0.18
1995	29,412	0.25	3,171	0.63			201,504	0.26	42,384	0.50	276,470	0.19
1996	42,848	0.28	3,817	0.50			387,403	0.33	112,573	0.49	546,641	0.26
1997	93,955	0.37	852,119	0.99			167,607	0.28	57,645	0.51	1,171,326	0.73
1998	25,938	0.32	3,893	0.93			189,489	0.42	42,320	0.61	261,639	0.32
1999	41,315	0.37	2,451	0.60			230,907	0.23	9,054	1.00	283,727	0.20
2000	12,314	0.35	2,331	0.62			171,054	0.33	96,351	0.60	282,050	0.28
2001	34,920	0.26	2,085	0.49			261,369	0.26	18,658	0.59	317,032	0.21
2002	120,376	0.20	19,592	0.57			314,402	0.23	91,727	0.80	546,098	0.18
2003	71,912	0.26	8,862	0.57			429,432	0.32	31,167	0.51	541,372	0.25
2004	74,136	0.17			27,184	0.59	590,478	0.30	41,515	0.86	733,313	0.23
2005	54,501	0.30			597	0.58	406,518	0.26	101,489	0.77	563,104	0.23
2006	53,476	0.31			473	0.40	463,893	0.31	4,385	0.81	522,226	0.27
2007	177,342	0.31			25,969	0.55	690,359	0.20	29,341	0.49	923,011	0.16
2008	64,756	0.36			3,810	0.55	681,896	0.24	16,860	0.63	767,322	0.20
2009	67,283	0.23			14,702	0.34	1,016,543	0.20	203,107	0.46	1,301,635	0.17
2010	108,805	0.32			3,167	0.53	737,670	0.21	52,698	0.69	902,339	0.18
2011	58,631	0.29			4,234	0.46	545,943	0.27	13,455	0.73	622,262	0.23
2012	137,988	0.28			6,188	0.45	465,592	0.28	133,241	0.57	743,009	0.21
2013	85,440	0.31			1,543	0.65	531,414	0.22	67,405	0.42	685,803	0.18
2014	113,813	0.22			5,779	0.46	1,037,354	0.22	201,925	0.81	1,358,870	0.21
2015	157,943	0.40			13,140	0.82	384,223	0.22	36,221	0.56	591,527	0.18
2016	37,559	0.20			20,618	0.57	1,386,906	0.41	106,992	0.60	1,552,076	0.37
2017	153,086	0.23			17,263	0.52	867,442	0.19	31,531	0.46	1,069,322	0.16
2018	147,464	0.29			12,186	0.34	587,112	0.22	159,324	0.44	906,086	0.16
2019	159,934	0.20			10,652	0.39	817,111	0.27	82,125	0.73	1,069,821	0.21
2020	211,625	0.19			16,723	0.24	1,283,522	0.36	34,817	0.56	1,546,687	0.29
2021	101,977	0.23			16,364	0.44	1,373,769	0.28	26,043	0.86	1,518,152	0.24

Table 8. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish 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.*

	FLKeys					FLE					GA					SC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	6 (2)	330	352	19	380	12 (8)	230	392	96	500	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1982	4 (4)	275	362	72	422	22 (11)	195	370	65	460	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1983	0 (0)	0	0	0	0	16 (7)	208	275	57	430	0 (0)	0	0	0	0	1 (1)	380	380	0	380
1984	1 (1)	370	370	0	370	28 (13)	175	271	60	480	1 (1)	340	340	0	340	1 (1)	500	500	0	500
1985	3 (1)	200	288	77	340	22 (13)	203	272	52	485	2 (2)	340	345	7	350	0 (0)	0	0	0	0
1986	0 (0)	0	0	0	0	19 (15)	256	352	82	500	1 (1)	270	270	0	270	3 (1)	340	432	87	512
1987	2 (2)	290	385	134	480	18 (11)	250	312	50	430	1 (1)	300	300	0	300	3 (3)	420	426	5	429
1988	4 (2)	215	246	22	265	35 (25)	168	311	85	436	0 (0)	0	0	0	0	9 (6)	280	371	49	434
1989	2 (2)	295	342	67	390	64 (30)	242	329	71	515	1 (1)	342	342	0	342	17 (7)	268	360	67	505
1990	3 (3)	420	477	51	520	73 (28)	215	276	66	515	2 (1)	205	217	17	229	8 (3)	310	409	84	511
1991	11 (8)	219	382	117	570	75 (36)	202	359	59	511	9 (3)	281	392	80	520	11 (6)	323	375	56	511
1992	13 (10)	239	322	41	358	106 (55)	220	371	59	590	63 (20)	222	354	45	532	10 (7)	222	334	75	511
1993	5 (2)	272	345	68	423	59 (29)	230	305	62	457	52 (12)	295	378	86	532	6 (4)	276	341	67	432
1994	10 (6)	350	422	51	511	45 (27)	170	297	61	420	32 (11)	263	353	53	422	3 (2)	389	408	28	440
1995	3 (3)	360	374	12	381	37 (20)	149	301	64	404	42 (10)	255	305	25	364	3 (2)	282	291	13	306
1996	3 (2)	240	313	103	430	28 (18)	223	316	55	433	45 (16)	250	326	45	468	15 (8)	230	335	40	375
1997	10 (4)	240	314	55	408	50 (26)	286	318	23	400	47 (13)	250	348	38	410	16 (7)	211	357	63	482
1998	1 (1)	510	510	0	510	40 (21)	278	354	59	450	62 (29)	255	347	51	432	27 (7)	283	349	36	430
1999	8 (5)	290	397	114	538	107 (54)	230	333	60	515	9 (5)	255	367	69	450	71 (18)	270	372	41	485
2000	8 (7)	256	396	100	543	49 (25)	230	328	54	500	5 (3)	280	317	30	364	46 (16)	213	333	67	443
2001	8 (5)	263	345	56	446	102 (58)	260	355	60	538	11 (7)	284	341	27	364	48 (8)	252	343	36	443
2002	10 (8)	279	334	67	470	217 (103)	228	332	52	476	16 (7)	297	351	32	426	26 (5)	299	340	34	435
2003	12 (8)	230	371	74	458	223 (109)	250	331	52	475	108 (37)	253	307	36	457	11 (7)	293	325	29	378
2004	11 (7)	286	361	49	476	280 (105)	252	331	46	532	149 (42)	252	334	40	469	71 (21)	257	326	34	417
2005	7 (6)	265	326	63	417	189 (91)	125	331	51	454	75 (32)	269	347	35	421	21 (8)	290	349	51	435
2006	13 (8)	271	340	58	482	177 (92)	252	335	50	461	105 (28)	241	376	61	532	25 (10)	285	349	51	435
2007	11 (8)	279	374	62	450	178 (83)	254	338	49	477	93 (27)	260	341	42	454	9 (6)	258	353	52	435
2008	3 (2)	291	357	60	407	156 (85)	268	339	50	510	58 (14)	252	339	32	404	24 (9)	272	349	30	420
2009	11 (9)	296	365	64	520	216 (113)	234	345	42	480	67 (15)	289	350	39	442	37 (12)	250	358	47	448
2010	13 (8)	352	398	44	522	198 (85)	189	341	38	475	68 (17)	292	359	35	454	38 (13)	255	393	59	480
2011	7 (4)	250	370	86	490	163 (59)	280	356	40	476	52 (10)	271	347	40	449	10 (4)	340	398	44	480

	FLKeys					FLE					GA					SC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2012	12 (9)	284	370	58	481	108 (57)	225	319	43	440	62 (12)	301	383	38	455	11 (6)	251	351	61	408
2013	10 (8)	285	371	74	504	183 (71)	210	344	49	488	23 (4)	321	396	43	512	8 (4)	313	383	72	489
2014	24 (14)	250	394	64	523	322 (134)	254	344	42	492	13 (6)	315	378	51	486	13 (6)	313	370	38	440
2015	23 (14)	293	379	53	455	197 (84)	257	350	43	518	8 (4)	307	334	27	388	39 (12)	266	365	47	440
2016	9 (7)	291	348	37	412	206 (96)	270	337	39	472	4 (2)	297	318	29	358	9 (5)	284	354	39	395
2017	7 (6)	296	383	48	428	136 (52)	260	354	45	545	12 (7)	324	383	42	461	5 (2)	319	340	36	404
2018	1 (1)	469	469	0	469	93 (46)	202	359	53	461	52 (16)	278	345	35	444	18 (8)	302	368	52	513
2019	3 (1)	389	408	17	423	130 (43)	260	362	54	517	36 (12)	274	350	52	520	19 (8)	332	369	44	513
2020	4 (2)	380	407	19	423	144 (37)	241	363	42	465	28 (15)	290	338	32	401	51 (19)	279	357	41	441
2021	1 (1)	354	354	0	354	298 (107)	230	369	46	518	3 (3)	322	352	32	385	38 (6)	284	360	44	452

Table 8 continued. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish by state and year.*

	NC					VA					MD					DE				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	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
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
1983	0 (0)	0	0	0	0	2 (1)	220	270	71	320	3 (2)	320	347	31	380	2 (1)	220	220	0	220
1984	1 (1)	351	351	0	351	1 (1)	382	382	0	382	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1985	2 (2)	284	327	61	370	4 (3)	300	385	74	480	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1986	2 (2)	370	370	0	370	18 (13)	330	391	34	440	0 (0)	0	0	0	0	2 (1)	295	298	4	300
1987	20 (9)	195	322	74	436	3 (1)	380	423	59	490	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1988	16 (7)	287	427	64	510	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1989	43 (14)	270	401	68	520	3 (3)	421	433	21	458	8 (4)	306	378	36	415	3 (2)	298	355	51	396
1990	43 (19)	270	395	56	510	6 (3)	250	336	76	440	4 (2)	260	320	59	395	5 (4)	270	332	52	400
1991	38 (20)	210	372	63	465	5 (2)	335	345	10	359	12 (4)	275	338	43	400	9 (4)	319	349	20	389
1992	115 (44)	271	374	76	590	13 (4)	294	325	29	378	5 (4)	290	307	20	340	15 (11)	259	317	31	366

	NC					VA					MD					DE				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1993	133 (33)	239	331	45	480	33 (7)	211	312	24	350	0 (0)	0	0	0	0	5 (4)	270	300	17	312
1994	331 (58)	220	366	50	550	5 (4)	298	355	34	381	1 (1)	281	281	0	281	1 (1)	325	325	0	325
1995	116 (36)	255	347	46	482	6 (5)	300	333	46	416	4 (3)	298	324	27	360	11 (7)	300	347	22	377
1996	323 (48)	240	358	52	468	16 (11)	263	330	38	386	12 (2)	288	332	35	419	24 (10)	294	335	26	377
1997	155 (35)	275	358	57	548	5 (3)	343	364	19	386	5 (3)	339	357	21	388	23 (6)	305	342	24	380
1998	48 (13)	252	350	38	442	2 (2)	292	318	36	343	4 (3)	312	354	30	380	2 (1)	332	338	9	345
1999	89 (24)	219	365	49	482	2 (1)	392	404	16	415	0 (0)	0	0	0	0	6 (3)	310	390	40	420
2000	33 (11)	275	371	43	450	6 (4)	309	356	36	392	3 (3)	375	404	39	448	9 (4)	333	368	52	459
2001	79 (23)	275	348	35	430	11 (9)	286	316	28	372	0 (0)	0	0	0	0	12 (8)	278	343	47	459
2002	129 (40)	272	379	77	620	34 (14)	277	322	28	375	10 (5)	275	343	39	373	8 (3)	295	356	47	459
2003	89 (23)	240	365	52	490	5 (3)	307	331	20	360	1 (1)	365	365	0	365	6 (5)	295	342	28	372
2004	49 (19)	285	362	54	469	10 (6)	286	333	28	392	8 (8)	306	355	36	411	33 (15)	298	343	30	411
2005	30 (9)	325	384	28	438	28 (4)	274	321	37	408	13 (8)	286	343	35	394	26 (10)	256	346	39	411
2006	25 (9)	310	377	56	480	5 (5)	321	365	34	400	8 (7)	256	319	41	394	9 (6)	223	342	52	393
2007	182 (55)	305	352	23	406	32 (21)	309	371	35	475	42 (28)	260	353	38	458	52 (18)	250	341	35	425
2008	116 (27)	262	370	46	458	26 (16)	285	345	42	431	0 (0)	0	0	0	0	24 (8)	249	295	31	350
2009	184 (50)	252	350	39	463	35 (26)	267	330	31	389	66 (26)	255	326	28	438	155 (30)	217	305	37	405
2010	512 (76)	254	354	49	508	8 (5)	267	334	42	385	4 (4)	305	332	21	351	34 (13)	266	325	28	380
2011	420 (54)	253	349	42	494	4 (3)	261	306	41	350	2 (2)	329	350	30	372	9 (6)	333	390	53	476
2012	319 (62)	251	370	45	484	14 (9)	252	330	58	455	4 (2)	347	362	14	380	43 (24)	229	355	46	476
2013	477 (55)	255	340	33	459	16 (8)	270	338	39	391	2 (2)	337	352	21	367	54 (32)	229	333	38	425
2014	337 (52)	250	366	50	553	3 (3)	275	316	39	353	33 (14)	246	324	39	389	62 (25)	229	336	31	406
2015	109 (33)	233	376	42	436	5 (4)	270	339	49	396	1 (1)	288	288	0	288	12 (4)	304	314	15	353
2016	237 (59)	195	352	46	468	13 (6)	256	297	34	374	16 (11)	284	351	35	409	9 (5)	304	329	24	370
2017	426 (86)	246	340	40	518	46 (24)	284	333	20	374	57 (42)	250	332	25	400	87 (38)	237	337	37	417
2018	421 (82)	210	344	39	452	154 (28)	248	336	34	415	40 (18)	291	353	43	469	89 (22)	241	352	39	443
2019	571 (71)	197	338	37	442	86 (28)	229	343	45	454	44 (9)	257	323	45	421	102 (21)	290	375	40	530
2020	963 (125)	197	337	39	524	209 (38)	229	339	41	456	54 (19)	268	350	41	469	17 (8)	246	344	38	380
2021	384 (80)	248	350	45	467	154 (53)	229	342	47	454	22 (8)	275	345	49	425	47 (27)	230	333	45	415

Table 8 continued. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish by state and year.*

	NJ					NY					CT					RI					MA				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	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
1982	1 (1)	334	334	0	334	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	3 (2)	293	296	2	297	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0	1 (1)	310	310	0	310
1984	0 (0)	0	0	0	0	0 (0)	0	0	0	0	1 (1)	388	388	0	388	1 (1)	390	390	0	390	0 (0)	0	0	0	0
1985	2 (1)	300	316	23	333	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 (2)	410	445	49	480	0 (0)	0	0	0	0	0 (0)	0	0	0	0	1 (1)	350	350	0	350	0 (0)	0	0	0	0
1987	2 (1)	280	305	35	330	17 (4)	280	347	45	400	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1988	0 (0)	0	0	0	0	2 (2)	255	307	74	359	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1989	5 (5)	355	402	32	434	38 (14)	260	376	37	440	1 (1)	370	370	0	370	1 (1)	370	370	0	370	0 (0)	0	0	0	0
1990	9 (5)	295	350	32	393	25 (12)	250	332	49	401	1 (1)	385	385	0	385	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1991	31 (13)	280	344	36	400	12 (9)	229	347	47	389	0 (0)	0	0	0	0	2 (2)	346	367	30	388	0 (0)	0	0	0	0
1992	2 (1)	310	310	1	311	7 (4)	320	341	15	358	0 (0)	0	0	0	0	1 (1)	307	307	0	307	0 (0)	0	0	0	0
1993	7 (6)	244	328	51	406	11 (8)	296	336	29	381	0 (0)	0	0	0	0	2 (2)	304	331	38	358	0 (0)	0	0	0	0
1994	0 (0)	0	0	0	0	23 (16)	242	330	45	406	0 (0)	0	0	0	0	1 (1)	347	347	0	347	3 (2)	369	370	1	371
1995	7 (7)	294	319	28	366	9 (3)	288	326	35	377	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
1996	8 (4)	281	316	28	366	4 (4)	288	319	41	380	0 (0)	0	0	0	0	4 (3)	321	325	5	329	1 (1)	337	337	0	337
1997	45 (17)	285	330	27	387	2 (2)	350	362	18	375	0 (0)	0	0	0	0	3 (3)	329	340	13	354	0 (0)	0	0	0	0
1998	3 (2)	310	378	59	418	2 (1)	351	378	38	405	0 (0)	0	0	0	0	15 (6)	354	354	0	354	0 (0)	0	0	0	0
1999	4 (4)	351	370	24	405	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2000	2 (2)	320	327	10	334	1 (1)	459	459	0	459	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2001	9 (8)	275	323	23	356	11 (7)	288	341	26	375	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2002	35 (19)	248	344	30	397	4 (2)	312	337	21	362	0 (0)	0	0	0	0	2 (2)	342	344	2	345	0 (0)	0	0	0	0
2003	5 (4)	248	307	44	358	8 (7)	290	338	27	365	0 (0)	0	0	0	0	9 (2)	311	339	15	369	0 (0)	0	0	0	0
2004	52 (20)	295	360	39	412	13 (7)	291	359	51	446	0 (0)	0	0	0	0	0 (0)	0	0	0	0	4 (3)	286	327	28	344
2005	4 (4)	320	363	42	408	9 (3)	288	324	39	392	0 (0)	0	0	0	0	1 (1)	344	344	0	344	0 (0)	0	0	0	0
2006	0 (0)	0	0	0	0	1 (1)	375	375	0	375	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2007	43 (27)	286	342	34	420	19 (11)	286	346	30	420	0 (0)	0	0	0	0	1 (1)	391	391	0	391	2 (1)	338	343	7	348
2008	7 (6)	296	338	40	397	4 (3)	350	396	53	472	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2009	30 (21)	270	334	30	399	6 (3)	294	321	35	381	0 (0)	0	0	0	0	2 (2)	331	352	29	372	0 (0)	0	0	0	0
2010	7 (6)	277	352	64	469	7 (6)	312	356	35	396	0 (0)	0	0	0	0	1 (1)	376	376	0	376	1 (1)	376	376	0	376
2011	15 (12)	318	356	29	405	2 (2)	340	341	1	342	0 (0)	0	0	0	0	0 (0)	0	0	0	0	0 (0)	0	0	0	0
2012	16 (12)	281	357	35	408	10 (6)	226	291	42	367	0 (0)	0	0	0	0	3 (3)	335	339	8	348	0 (0)	0	0	0	0
2013	5 (5)	255	319	42	372	5 (5)	246	282	39	338	1 (1)	355	355	0	355	2 (1)	335	342	9	348	2 (2)	348	356	11	364

	NJ					NY					CT					RI					MA				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2014	19 (14)	273	338	31	390	13 (5)	275	303	23	358	0 (0)	0	0	0	0	7 (5)	315	346	19	364	0 (0)	0	0	0	0
2015	34 (22)	239	333	53	433	10 (6)	270	322	31	380	1 (1)	316	316	0	316	4 (1)	315	339	20	364	1 (1)	316	316	0	316
2016	42 (19)	242	341	47	411	10 (9)	250	294	31	338	0 (0)	0	0	0	0	3 (3)	316	326	15	343	0 (0)	0	0	0	0
2017	45 (28)	229	327	31	374	16 (11)	305	330	21	377	22 (11)	265	315	27	352	12 (9)	290	336	21	364	1 (1)	315	315	0	315
2018	110 (40)	232	337	39	440	23 (11)	290	346	37	420	16 (9)	326	354	25	391	8 (4)	315	362	33	400	2 (2)	355	360	8	366
2019	53 (24)	256	354	47	451	15 (10)	285	358	43	420	3 (3)	285	334	56	395	2 (2)	334	340	9	347	3 (3)	296	321	26	347
2020	86 (23)	232	348	41	451	22 (11)	301	362	38	423	12 (4)	321	355	27	391	7 (5)	285	348	44	400	0 (0)	0	0	0	0
2021	61 (27)	261	348	43	425	27 (22)	278	355	54	452	4 (4)	342	381	53	454	11 (10)	342	386	36	454	0 (0)	0	0	0	0

Table 9. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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.*

	FLKeys					FLE					GA					SC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	6 (2)	2.0	2.4	0.4	2.9	12 (8)	0.4	3.2	1.8	5.6	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0
1982	4 (4)	0.9	2.4	1.3	3.5	22 (11)	0.2	2.5	1.0	4.4	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	16 (7)	0.4	1.2	0.7	3.4	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.7	2.7	0.0	2.7
1984	1 (1)	2.1	2.1	0.0	2.1	28 (13)	0.2	1.2	1.1	6.3	1 (1)	3.1	3.1	0.0	3.1	1 (1)	5.1	5.1	0.0	5.1
1985	3 (1)	0.7	1.2	0.5	1.5	22 (13)	0.2	0.8	0.5	2.9	2 (2)	1.8	2.3	0.7	2.7	0 (0)	0.0	0.0	0.0	0.0
1986	0 (0)	0.0	0.0	0.0	0.0	19 (15)	0.7	2.2	1.9	6.8	1 (1)	0.9	0.9	0.0	0.9	3 (1)	1.9	4.1	2.2	6.3
1987	2 (2)	1.7	2.8	1.5	3.9	18 (11)	0.7	1.6	0.7	3.1	1 (1)	0.9	0.9	0.0	0.9	3 (3)	4.4	4.7	0.3	4.9
1988	4 (2)	0.4	0.7	0.2	0.9	4 (2)	0.9	1.8	0.8	2.9	0 (0)	0.0	0.0	0.0	0.0	3 (3)	1.1	1.9	0.7	2.4
1989	2 (2)	1.2	2.1	1.3	3.0	64 (30)	0.7	1.8	1.4	7.0	1 (1)	2.0	2.0	0.0	2.0	17 (7)	1.1	3.7	1.8	7.1
1990	3 (3)	3.4	6.1	2.6	8.6	73 (28)	0.4	1.1	1.2	7.7	2 (1)	0.4	0.6	0.2	0.7	3 (2)	2.7	4.6	2.2	7.1
1991	11 (8)	0.4	3.5	3.2	9.5	75 (36)	0.4	2.1	1.0	7.7	9 (3)	1.1	3.4	2.1	7.7	10 (5)	1.9	4.4	2.3	7.3
1992	13 (10)	0.8	1.8	0.5	2.2	98 (49)	0.9	2.9	1.7	13.0	63 (20)	0.7	2.9	1.3	10.4	10 (7)	0.7	2.0	1.1	4.9
1993	5 (2)	0.9	2.5	1.3	4.2	59 (29)	0.4	1.7	1.2	5.6	52 (12)	1.5	3.9	3.0	9.7	6 (4)	1.1	1.7	0.8	2.6
1994	10 (6)	2.7	4.1	1.2	6.7	45 (27)	0.2	1.5	0.9	4.0	32 (11)	1.0	2.5	0.9	4.1	3 (2)	3.5	3.7	0.4	4.1
1995	3 (3)	2.2	3.3	1.2	4.6	37 (20)	0.3	1.7	0.9	3.1	42 (10)	0.9	1.9	0.7	4.1	3 (2)	1.1	1.3	0.2	1.4
1996	3 (2)	0.9	2.0	1.8	4.0	28 (18)	0.7	1.8	0.8	3.6	45 (16)	1.3	2.6	1.0	5.1	15 (8)	0.7	2.4	1.0	4.4
1997	10 (4)	0.9	1.8	1.0	3.6	50 (26)	1.1	1.5	0.4	3.3	47 (13)	1.3	3.1	1.0	5.6	16 (7)	0.5	3.1	1.6	7.0
1998	1 (1)	9.5	9.5	0.0	9.5	40 (21)	1.0	2.5	1.6	5.8	62 (29)	0.7	2.4	1.7	9.9	27 (7)	1.1	2.4	0.7	4.4
1999	8 (5)	1.2	4.4	3.9	10.0	107 (54)	0.7	2.5	1.5	8.3	9 (5)	0.7	2.9	2.1	6.0	71 (18)	1.0	2.6	0.7	4.3
2000	8 (7)	0.9	4.0	2.8	9.2	49 (25)	0.7	2.1	1.3	6.6	5 (3)	1.4	2.2	0.9	3.7	46 (16)	0.5	2.2	1.3	5.1
2001	8 (5)	1.0	2.5	1.3	5.1	102 (58)	0.5	2.7	1.5	7.6	11 (7)	1.3	2.2	0.8	4.3	48 (8)	0.7	2.0	0.7	4.3
2002	10 (8)	1.0	2.1	1.6	5.7	217 (103)	0.5	2.1	1.1	5.6	16 (7)	1.3	2.7	0.7	4.0	26 (5)	1.4	3.8	1.2	7.3
2003	12 (8)	0.8	2.9	1.4	4.9	223 (109)	0.8	2.1	1.1	5.8	108 (37)	0.8	2.4	1.2	5.4	11 (7)	0.9	2.3	0.9	4.1
2004	11 (7)	1.2	2.5	1.2	5.6	280 (105)	0.8	2.0	1.2	9.3	149 (42)	0.8	1.9	0.7	4.4	71 (21)	0.9	1.8	0.6	3.7
2005	7 (6)	0.8	2.0	1.2	3.7	189 (91)	0.1	1.9	0.9	4.8	75 (32)	1.0	2.3	0.8	4.2	21 (8)	1.2	2.3	1.1	4.6
2006	13 (8)	1.0	2.2	1.4	6.4	177 (92)	0.7	2.1	1.1	6.1	105 (28)	0.7	2.8	1.6	7.7	25 (10)	1.2	2.4	1.1	4.6
2007	11 (8)	1.1	2.9	1.3	5.1	178 (83)	0.9	2.1	1.0	5.5	93 (27)	0.9	2.1	0.8	4.9	9 (6)	1.0	2.4	1.1	4.6
2008	3 (2)	1.4	2.5	1.1	3.5	156 (85)	1.0	2.2	1.1	6.3	58 (14)	0.9	2.2	0.7	4.4	24 (9)	1.1	2.2	0.8	4.1
2009	11 (9)	0.8	2.6	1.7	7.1	216 (113)	0.6	2.2	0.9	5.8	67 (15)	1.3	2.5	1.0	5.5	37 (12)	0.7	2.3	0.9	4.6
2010	13 (8)	2.1	3.2	1.3	7.1	198 (85)	0.3	2.1	0.8	5.8	68 (17)	1.1	2.5	0.8	5.3	38 (13)	0.9	3.3	1.4	5.5
2011	7 (4)	0.7	2.8	1.8	6.0	163 (59)	1.2	2.4	0.9	5.3	52 (10)	0.9	2.2	0.8	4.4	10 (4)	2.1	2.9	0.9	4.9
2012	12 (9)	1.0	2.7	1.5	5.7	108 (57)	0.5	1.7	0.8	4.5	62 (12)	1.2	3.0	0.8	5.3	11 (6)	0.8	2.4	1.0	3.6

	FLKeys					FLE					GA					SC				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2013	10 (8)	1.1	3.0	2.0	6.9	183 (71)	0.6	2.2	1.0	6.1	23 (4)	1.8	3.3	1.1	6.0	8 (4)	1.5	3.1	1.8	6.0
2014	24 (14)	0.8	3.3	1.6	7.3	322 (134)	0.4	2.2	0.8	5.6	13 (6)	1.8	3.1	1.1	5.7	13 (6)	1.5	2.6	0.8	4.6
2015	23 (14)	1.3	2.9	1.2	5.1	197 (84)	0.6	2.3	1.0	7.7	8 (4)	1.7	2.1	0.5	3.1	39 (12)	1.2	2.8	1.2	6.2
2016	9 (7)	1.1	2.1	0.7	3.2	206 (96)	1.0	2.0	0.8	5.7	4 (2)	1.4	1.7	0.4	2.2	9 (5)	1.2	2.2	0.6	2.9
2017	7 (6)	1.3	3.0	1.2	4.4	136 (52)	0.9	2.4	1.0	8.5	12 (7)	1.8	2.8	1.0	4.6	5 (2)	1.5	2.2	0.7	3.3
2018	1 (1)	5.7	5.7	0.0	5.7	93 (46)	0.5	2.5	1.1	5.0	52 (16)	1.1	2.2	0.7	4.4	18 (8)	1.3	2.6	1.3	6.8
2019	3 (1)	3.0	3.4	0.4	3.7	130 (43)	0.7	2.5	1.3	7.7	36 (12)	1.1	2.2	1.2	6.8	19 (8)	1.8	2.8	1.1	6.8
2020	4 (2)	2.9	3.5	0.5	3.9	144 (37)	0.7	2.6	0.9	5.2	28 (15)	1.2	2.0	0.6	3.3	51 (19)	1.1	2.4	1.0	4.6
2021	1 (1)	2.2	2.2	0.0	2.2	298 (107)	0.5	2.7	1.0	6.9	3 (3)	1.7	1.9	0.4	2.4	38 (6)	1.1	2.5	0.9	4.4

Table 9 continued. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish by state and year.*

	NC					VA					MD					DE				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	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	2 (1)	1.3	1.4	0.2	1.5	3 (2)	2.0	2.4	0.4	2.8	2 (1)	1.3	1.3	0.0	1.3
1984	1 (1)	2.2	2.2	0.0	2.2	1 (1)	3.5	3.5	0.0	3.5	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0
1985	2 (2)	1.4	3.3	2.8	5.3	4 (3)	1.8	3.2	0.9	3.9	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0
1986	2 (2)	2.5	2.8	0.4	3.1	18 (13)	2.1	4.2	2.1	10.3	0 (0)	0.0	0.0	0.0	0.0	2 (1)	1.5	1.5	0.0	1.5
1987	20 (9)	0.2	2.0	1.3	4.7	3 (1)	3.1	3.9	1.1	5.1	0 (0)	0.0	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	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	42 (13)	0.5	3.8	2.0	7.9	3 (3)	3.1	4.1	1.6	6.0	8 (4)	1.6	3.6	1.4	5.1	3 (2)	1.6	2.4	0.8	3.2
1990	43 (19)	0.4	3.6	1.7	8.5	6 (3)	1.0	2.0	1.1	3.9	4 (2)	1.1	2.4	1.4	4.3	5 (4)	1.9	3.0	1.2	4.8
1991	38 (20)	0.9	2.9	1.4	5.4	5 (2)	2.0	2.2	0.2	2.4	12 (4)	1.3	2.5	1.0	4.3	9 (4)	1.8	2.4	0.6	3.4
1992	115 (44)	0.9	3.3	2.5	12.3	13 (4)	1.6	2.3	0.7	3.3	5 (4)	1.5	2.2	0.4	2.6	15 (11)	0.9	2.4	1.2	5.1

	NC					VA					MD					DE				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1993	133 (33)	0.7	1.9	0.7	4.9	33 (7)	0.7	1.6	0.3	2.4	0 (0)	0.0	0.0	0.0	0.0	5 (4)	1.1	1.6	0.3	2.0
1994	331 (58)	0.6	2.6	1.1	7.9	5 (4)	2.1	3.2	1.0	4.2	1 (1)	1.1	1.1	0.0	1.1	1 (1)	2.2	2.2	0.0	2.2
1995	116 (36)	0.4	2.1	0.9	6.0	6 (5)	1.4	2.2	1.0	4.1	4 (3)	1.4	1.9	0.4	2.2	11 (7)	1.6	2.7	0.6	3.9
1996	323 (48)	0.7	2.2	1.0	5.4	16 (11)	1.5	3.7	1.8	6.1	12 (2)	1.1	1.8	0.6	3.4	24 (10)	1.4	2.4	0.8	4.9
1997	155 (35)	1.0	2.5	1.4	7.6	5 (3)	2.0	2.6	0.6	3.3	5 (3)	2.0	2.2	0.3	2.5	23 (6)	1.9	3.1	0.9	4.7
1998	48 (13)	1.0	2.8	0.9	4.4	2 (2)	1.3	1.8	0.7	2.4	4 (3)	1.8	3.0	1.0	4.0	2 (1)	2.8	2.9	0.2	3.1
1999	89 (24)	0.8	2.7	0.8	4.4	2 (1)	3.7	3.8	0.2	3.9	0 (0)	0.0	0.0	0.0	0.0	6 (3)	3.1	4.6	0.8	5.1
2000	33 (11)	1.2	2.6	0.8	4.2	6 (4)	1.8	3.0	1.0	4.5	3 (3)	2.9	4.1	1.0	4.7	9 (4)	2.5	3.2	0.6	4.0
2001	79 (23)	1.2	2.5	0.8	3.8	11 (9)	1.1	2.0	0.7	3.7	0 (0)	0.0	0.0	0.0	0.0	12 (8)	1.3	2.6	0.9	4.2
2002	122 (37)	1.1	2.9	1.6	7.5	34 (14)	1.0	2.0	0.7	3.5	10 (5)	1.2	2.2	0.7	3.2	8 (3)	1.7	2.9	0.7	3.9
2003	89 (23)	1.0	2.6	1.1	6.3	5 (3)	1.6	2.4	0.6	3.0	1 (1)	2.6	2.6	0.0	2.6	6 (5)	1.5	2.1	0.5	2.6
2004	49 (19)	1.5	2.6	1.2	5.4	10 (6)	1.1	2.0	0.9	4.2	8 (8)	1.4	2.2	0.6	3.1	32 (14)	1.3	2.3	0.7	3.9
2005	30 (9)	2.0	3.1	0.5	4.0	28 (4)	1.0	1.9	0.8	3.7	11 (6)	1.2	2.0	0.5	3.0	24 (9)	1.0	2.4	0.8	3.9
2006	25 (9)	1.3	2.9	1.2	5.8	5 (5)	1.7	2.6	0.8	3.7	8 (7)	1.0	1.9	0.6	3.1	9 (6)	0.7	2.5	1.0	3.6
2007	182 (55)	1.1	1.8	0.4	3.4	32 (21)	1.4	2.5	0.7	4.2	42 (28)	0.9	2.3	0.7	4.9	52 (18)	0.8	2.4	0.8	4.6
2008	116 (27)	1.0	2.8	1.3	7.1	26 (16)	1.1	2.4	0.8	3.7	0 (0)	0.0	0.0	0.0	0.0	24 (8)	0.9	1.6	0.5	2.8
2009	184 (50)	0.9	2.1	0.8	5.2	35 (26)	1.0	2.0	0.6	3.3	66 (26)	1.0	1.9	0.4	3.0	155 (30)	0.6	1.6	0.6	3.5
2010	512 (76)	0.8	2.3	1.0	6.1	8 (5)	1.0	2.1	0.8	3.3	4 (4)	1.5	2.0	0.5	2.4	34 (13)	1.1	1.9	0.6	3.6
2011	420 (54)	0.8	2.1	0.8	6.4	4 (3)	1.3	2.2	0.7	3.0	2 (2)	1.8	2.5	0.9	3.1	9 (6)	1.9	3.0	0.7	3.9
2012	319 (62)	0.8	2.8	1.0	6.0	14 (9)	1.0	2.1	1.1	4.9	4 (2)	2.1	2.5	0.3	2.9	43 (24)	0.8	2.5	0.8	3.8
2013	477 (55)	0.9	2.1	0.6	4.9	16 (8)	1.1	2.2	0.7	3.2	2 (2)	2.1	2.3	0.4	2.6	54 (32)	1.1	2.1	0.6	3.5
2014	337 (52)	0.9	2.6	1.2	7.7	3 (3)	1.1	1.8	0.7	2.5	33 (14)	0.8	1.9	0.6	3.0	62 (25)	1.4	2.2	0.7	4.3
2015	109 (33)	0.9	2.7	0.8	4.2	5 (4)	1.3	2.3	0.8	3.3	1 (1)	1.5	1.5	0.0	1.5	12 (4)	1.9	2.7	0.4	3.1
2016	237 (59)	0.3	2.2	1.0	6.2	13 (6)	1.0	1.4	0.5	2.6	16 (11)	1.2	2.2	0.7	3.5	9 (5)	0.8	1.9	0.8	3.3
2017	426 (86)	0.9	1.9	0.7	5.7	46 (24)	1.2	1.9	0.4	2.8	57 (42)	0.9	1.9	0.4	3.2	87 (38)	0.7	1.8	0.6	3.7
2018	421 (82)	0.4	2.1	0.6	4.4	154 (28)	0.8	2.0	0.6	4.0	40 (18)	1.2	2.3	0.9	4.9	89 (22)	1.0	2.2	0.7	4.0
2019	571 (71)	0.4	2.0	0.8	6.6	86 (28)	0.6	2.4	0.9	5.5	44 (9)	0.8	1.9	0.7	3.3	102 (21)	1.0	3.2	1.3	9.9
2020	963 (125)	0.4	2.0	0.8	7.1	209 (38)	0.6	2.1	0.8	5.5	54 (19)	1.0	2.3	0.8	4.9	17 (8)	0.9	2.3	0.7	3.0
2021	384 (80)	0.9	2.3	0.9	5.3	154 (53)	0.6	2.4	1.1	5.5	22 (8)	1.1	2.3	0.9	4.4	47 (27)	0.8	2.2	0.9	4.0

Table 9 continued. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish by state and year.*

	NJ					NY					CT					RI					MA				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	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	0 (0)	0.0	0.0	0.0	0.0
1982	1 (1)	2.2	2.2	0.0	2.2	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)	0.0	0.0	0.0	0.0
1983	3 (2)	1.7	1.8	0.1	1.9	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	1 (1)	2.3	2.3	0.0	2.3
1984	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0	1 (1)	4.0	4.0	0.0	4.0	1 (1)	3.3	3.3	0.0	3.3	0 (0)	0.0	0.0	0.0	0.0
1985	2 (1)	1.8	1.8	0.0	1.8	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)	0.0	0.0	0.0	0.0
1986	2 (2)	3.3	3.3	0.0	3.3	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.5	2.5	0.0	2.5	0 (0)	0.0	0.0	0.0	0.0
1987	2 (1)	1.1	1.1	0.0	1.1	17 (4)	1.1	2.7	1.1	4.9	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
1988	0 (0)	0.0	0.0	0.0	0.0	2 (2)	1.0	1.8	1.2	2.7	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
1989	5 (5)	2.6	3.6	1.0	5.1	38 (14)	1.2	2.8	0.6	3.7	1 (1)	2.6	2.6	0.0	2.6	1 (1)	2.6	2.6	0.0	2.6	0 (0)	0.0	0.0	0.0	0.0
1990	9 (5)	1.3	2.5	0.7	3.5	25 (12)	1.1	2.4	0.9	4.0	1 (1)	2.8	2.8	0.0	2.8	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0
1991	31 (13)	1.3	2.4	0.8	3.8	12 (9)	0.9	2.9	1.1	4.4	0 (0)	0.0	0.0	0.0	0.0	2 (2)	2.5	3.1	0.8	3.7	0 (0)	0.0	0.0	0.0	0.0
1992	2 (1)	1.6	1.6	0.0	1.6	7 (4)	2.0	2.3	0.3	2.9	0 (0)	0.0	0.0	0.0	0.0	1 (1)	1.6	1.6	0.0	1.6	0 (0)	0.0	0.0	0.0	0.0
1993	7 (6)	0.7	2.0	1.1	3.9	11 (8)	1.3	2.0	0.6	3.1	0 (0)	0.0	0.0	0.0	0.0	2 (2)	1.6	2.0	0.6	2.4	0 (0)	0.0	0.0	0.0	0.0
1994	0 (0)	0.0	0.0	0.0	0.0	23 (16)	0.7	2.1	0.8	3.7	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.6	2.6	0.0	2.6	3 (2)	2.6	2.7	0.0	2.7
1995	7 (7)	1.3	1.8	0.6	2.8	9 (3)	1.5	2.1	0.6	3.1	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	8 (4)	1.1	1.8	0.6	2.8	4 (4)	1.5	1.9	0.6	2.9	0 (0)	0.0	0.0	0.0	0.0	4 (3)	1.7	1.7	0.0	1.7	1 (1)	2.6	2.6	0.0	2.6
1997	45 (17)	1.3	2.1	0.6	3.5	2 (2)	1.8	1.9	0.2	2.1	0 (0)	0.0	0.0	0.0	0.0	3 (3)	1.7	2.2	0.5	2.5	0 (0)	0.0	0.0	0.0	0.0
1998	3 (2)	1.5	2.9	1.1	3.6	2 (1)	2.4	2.9	0.7	3.4	0 (0)	0.0	0.0	0.0	0.0	15 (6)	2.5	2.5	0.0	2.6	0 (0)	0.0	0.0	0.0	0.0
1999	4 (4)	2.5	2.9	0.4	3.4	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)	0.0	0.0	0.0	0.0
2000	2 (2)	2.0	2.4	0.5	2.8	1 (1)	3.4	3.4	0.0	3.4	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
2001	9 (8)	1.2	1.9	0.5	2.6	11 (7)	1.0	2.1	0.5	2.6	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
2002	35 (19)	0.8	2.3	0.6	3.8	4 (2)	1.7	2.0	0.3	2.4	0 (0)	0.0	0.0	0.0	0.0	2 (2)	2.0	2.1	0.2	2.2	0 (0)	0.0	0.0	0.0	0.0
2003	5 (4)	0.8	1.7	0.7	2.5	8 (7)	1.5	2.5	0.5	3.1	0 (0)	0.0	0.0	0.0	0.0	9 (2)	1.5	2.1	0.4	3.0	0 (0)	0.0	0.0	0.0	0.0
2004	52 (20)	1.4	2.4	0.5	3.3	13 (7)	1.1	2.7	1.2	4.4	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0	4 (3)	1.3	1.9	0.5	2.4
2005	4 (4)	2.0	2.6	0.8	3.7	9 (3)	1.1	2.2	1.3	4.4	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.4	2.4	0.0	2.4	0 (0)	0.0	0.0	0.0	0.0
2006	0 (0)	0.0	0.0	0.0	0.0	1 (1)	3.1	3.1	0.0	3.1	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
2007	43 (27)	0.9	2.2	0.8	4.1	19 (11)	1.2	2.2	0.7	3.9	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.0	2.0	0.0	2.0	2 (1)	2.0	2.0	0.1	2.1
2008	7 (6)	1.3	2.7	0.9	3.5	4 (3)	2.3	3.5	1.5	5.7	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
2009	30 (21)	1.1	2.2	0.7	3.3	6 (3)	1.3	1.9	0.4	2.3	0 (0)	0.0	0.0	0.0	0.0	2 (2)	2.1	2.4	0.5	2.8	0 (0)	0.0	0.0	0.0	0.0
2010	7 (6)	1.2	2.3	0.9	3.3	7 (6)	1.8	2.5	0.7	3.6	0 (0)	0.0	0.0	0.0	0.0	1 (1)	3.5	3.5	0.0	3.5	1 (1)	3.5	3.5	0.0	3.5
2011	15 (12)	1.8	2.9	1.0	5.3	2 (2)	2.0	2.0	0.0	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
2012	16 (12)	1.3	2.6	0.8	3.9	10 (6)	0.8	1.5	0.5	2.7	0 (0)	0.0	0.0	0.0	0.0	3 (3)	2.2	2.2	0.1	2.3	0 (0)	0.0	0.0	0.0	0.0
2013	5 (5)	0.8	1.9	0.7	2.8	5 (5)	0.8	1.3	0.5	1.9	1 (1)	2.4	2.4	0.0	2.4	2 (1)	2.2	2.3	0.1	2.3	2 (2)	2.3	2.6	0.5	3.0

	NJ					NY					CT					RI					MA				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2014	19 (14)	1.1	2.4	0.6	3.4	13 (5)	1.1	1.5	0.4	2.6	0 (0)	0.0	0.0	0.0	0.0	7 (5)	1.9	2.5	0.5	3.0	0 (0)	0.0	0.0	0.0	0.0
2015	34 (22)	0.7	2.2	1.0	4.4	10 (6)	1.3	1.9	0.5	3.0	1 (1)	1.7	1.7	0.0	1.7	4 (1)	1.9	2.2	0.5	3.0	1 (1)	1.7	1.7	0.0	1.7
2016	42 (19)	0.7	2.2	1.0	4.4	10 (9)	0.9	1.4	0.5	2.4	0 (0)	0.0	0.0	0.0	0.0	3 (3)	1.5	1.8	0.3	2.1	0 (0)	0.0	0.0	0.0	0.0
2017	45 (28)	0.6	1.9	0.5	3.2	16 (11)	1.4	1.9	0.4	2.5	22 (11)	1.0	1.6	0.3	2.1	12 (9)	1.2	1.9	0.3	2.4	1 (1)	1.9	1.9	0.0	1.9
2018	110 (40)	0.6	2.1	0.8	4.4	23 (11)	1.1	2.1	0.7	3.6	16 (9)	1.7	2.2	0.5	2.9	8 (4)	1.9	2.5	0.5	3.1	2 (2)	2.2	2.4	0.2	2.5
2019	53 (24)	1.2	2.5	0.9	5.5	15 (10)	1.3	2.7	0.9	4.2	3 (3)	1.5	2.4	1.4	4.0	2 (2)	1.9	2.0	0.2	2.1	3 (3)	1.3	1.7	0.4	2.1
2020	86 (23)	0.6	2.2	0.8	4.4	22 (11)	1.3	2.5	0.8	4.1	12 (4)	1.7	2.3	0.5	3.0	7 (5)	1.3	2.3	0.9	4.0	0 (0)	0.0	0.0	0.0	0.0
2021	61 (27)	0.9	2.3	0.8	4.4	27 (22)	1.1	2.5	1.1	4.7	4 (4)	2.5	3.5	1.4	5.5	11 (10)	2.5	3.6	1.0	5.5	0 (0)	0.0	0.0	0.0	0.0

Table 10. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	0 (0)	0	0	0	0	0 (0)	0	0	0	0	17 (9)	230	379	82	500	1 (1)	380	380	0	380
1982	0 (0)	0	0	0	0	1 (1)	334	334	0	334	23 (12)	275	382	52	460	3 (3)	195	272	83	360
1983	3 (2)	220	307	81	380	3 (2)	320	347	31	380	18 (8)	208	279	54	430	4 (3)	220	254	40	297
1984	3 (3)	340	397	89	500	0 (0)	0	0	0	0	24 (12)	238	303	59	480	8 (5)	175	233	69	390
1985	4 (2)	200	304	70	350	5 (3)	300	339	41	390	25 (16)	203	288	67	485	1 (1)	267	267	0	267
1986	5 (3)	340	415	70	512	5 (5)	370	422	41	480	38 (28)	256	360	66	500	0 (0)	0	0	0	0
1987	17 (7)	195	331	77	436	2 (1)	280	305	35	330	42 (21)	245	341	63	490	5 (3)	280	324	50	400
1988	24 (12)	213	405	73	510	0 (0)	0	0	0	0	38 (26)	168	315	77	436	4 (4)	195	245	97	390
1989	37 (15)	242	409	74	520	15 (13)	306	379	39	458	129 (52)	255	350	62	515	5 (4)	260	363	66	440
1990	37 (19)	298	402	68	520	9 (6)	260	342	51	401	127 (52)	205	306	74	515	6 (4)	326	369	25	396
1991	52 (26)	205	383	71	570	23 (16)	275	344	38	400	127 (58)	215	358	51	511	13 (7)	202	314	83	426
1992	198 (75)	251	370	69	590	3 (3)	302	324	19	338	128 (70)	222	350	51	450	21 (13)	220	329	52	420
1993	104 (32)	295	368	69	532	10 (9)	211	306	47	355	148 (57)	235	315	47	450	51 (9)	230	309	39	457
1994	320 (60)	220	365	51	550	9 (9)	298	355	36	406	107 (48)	170	339	63	511	19 (12)	242	323	50	405
1995	159 (48)	255	338	45	482	6 (4)	300	316	24	360	58 (35)	230	319	44	382	15 (9)	149	290	76	404
1996	315 (59)	240	354	51	468	9 (7)	281	314	22	361	145 (51)	223	340	50	468	14 (10)	224	309	37	374
1997	223 (55)	211	353	53	548	17 (14)	285	332	30	387	113 (44)	240	333	34	408	8 (6)	320	350	21	388
1998	131 (50)	255	347	42	510	1 (1)	310	310	0	310	64 (31)	278	359	53	450	10 (4)	252	356	51	422
1999	179 (53)	250	366	48	515	8 (5)	351	388	26	420	108 (55)	219	339	67	538	1 (1)	405	405	0	405
2000	76 (33)	213	341	67	543	6 (6)	320	383	45	459	73 (31)	230	347	54	500	7 (6)	236	374	72	448
2001	167 (66)	252	347	46	538	10 (10)	286	313	25	356	111 (54)	260	352	46	500	3 (3)	262	282	22	305
2002	284 (110)	265	360	64	620	47 (27)	248	343	34	397	154 (67)	228	324	50	476	6 (4)	312	341	18	362
2003	337 (126)	230	331	49	490	10 (10)	290	342	25	365	118 (64)	250	336	57	475	12 (6)	258	361	52	442
2004	513 (158)	252	336	42	532	32 (25)	286	349	41	412	131 (67)	262	342	53	532	4 (3)	286	316	31	357
2005	253 (101)	125	341	46	440	12 (11)	291	351	27	394	127 (60)	195	337	46	454	11 (4)	125	336	82	406
2006	223 (79)	241	360	57	532	14 (13)	223	322	48	400	129 (72)	252	340	55	475	2 (2)	287	312	36	338
2007	365 (115)	250	350	36	477	98 (66)	260	349	34	458	193 (98)	254	340	46	440	8 (7)	290	312	21	345
2008	202 (69)	249	344	44	472	19 (14)	289	344	42	397	193 (84)	252	351	52	510	4 (3)	301	329	19	345
2009	436 (114)	217	334	43	480	103 (63)	267	331	29	438	246 (117)	250	347	46	520	24 (13)	268	322	29	399
2010	661 (131)	254	351	46	522	11 (10)	305	343	24	376	214 (90)	189	359	50	488	5 (4)	298	346	39	396
2011	513 (72)	250	347	41	494	23 (20)	261	343	33	405	146 (62)	280	367	45	476	2 (2)	357	360	4	362

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2012	401 (104)	251	370	46	484	34 (23)	259	351	47	455	160 (69)	225	332	50	470	7 (6)	225	308	45	350
2013	546 (59)	229	345	37	488	8 (8)	255	319	35	367	215 (117)	210	339	48	512	19 (14)	271	327	35	391
2014	552 (133)	229	355	49	553	52 (37)	273	328	33	406	232 (100)	254	354	45	523	10 (8)	293	337	29	384
2015	288 (93)	257	360	46	518	32 (21)	239	332	46	433	118 (68)	253	354	44	475	6 (5)	233	282	35	316
2016	286 (89)	256	349	44	472	56 (34)	242	330	44	409	204 (89)	255	338	39	449	12 (10)	195	298	44	342
2017	416 (98)	248	346	44	518	135 (92)	229	327	29	400	309 (118)	246	339	34	545	12 (9)	248	318	37	366
2018	547 (112)	210	350	38	461	217 (56)	232	340	40	469	234 (106)	202	344	45	513	29 (13)	241	319	34	377
2019	761 (111)	240	347	42	530	105 (32)	229	346	44	454	192 (85)	197	344	50	517	9 (7)	302	369	41	431
2020	1,080 (162)	235	341	40	524	322 (69)	229	342	42	469	185 (73)	197	351	41	458	10 (2)	241	317	43	377
2021	563 (148)	230	351	47	518	156 (70)	229	348	45	454	326 (126)	230	363	47	470	5 (4)	278	336	52	394

Table 11. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0	17 (9)	0.4	2.9	1.5	5.6	1 (1)	2.8	2.8	0.0	2.8
1982	0 (0)	0.0	0.0	0.0	0.0	1 (1)	2.2	2.2	0.0	2.2	23 (12)	0.7	2.6	0.9	4.4	3 (3)	0.2	1.5	1.6	3.3
1983	3 (2)	1.3	1.9	0.7	2.7	3 (2)	2.0	2.4	0.4	2.8	18 (8)	0.4	1.4	0.8	3.4	4 (3)	1.1	1.4	0.3	1.7
1984	3 (3)	2.2	3.5	1.5	5.1	0 (0)	0.0	0.0	0.0	0.0	24 (12)	0.4	1.6	1.3	6.3	8 (5)	0.2	0.8	1.0	3.3
1985	4 (2)	0.7	1.6	0.9	2.7	5 (3)	1.8	2.6	1.1	3.9	25 (16)	0.2	1.2	1.2	5.3	1 (1)	0.9	0.9	0.0	0.9
1986	5 (3)	1.9	5.1	3.4	10.3	5 (5)	3.0	3.7	1.1	5.6	38 (28)	0.7	2.8	1.8	6.8	0 (0)	0.0	0.0	0.0	0.0
1987	17 (7)	0.2	2.1	1.4	4.7	2 (1)	1.1	1.1	0.0	1.1	42 (21)	0.7	2.4	1.2	5.1	5 (3)	1.1	2.2	1.5	4.9
1988	2 (2)	2.2	2.3	0.2	2.4	0 (0)	0.0	0.0	0.0	0.0	11 (7)	0.4	1.3	0.8	2.9	0 (0)	0.0	0.0	0.0	0.0

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1989	36 (14)	0.7	4.1	2.2	7.9	15 (13)	1.6	3.0	1.0	6.0	129 (52)	0.5	2.5	1.4	7.0	5 (4)	1.2	2.5	0.8	3.5
1990	32 (18)	1.1	4.2	2.1	8.6	9 (6)	1.1	2.6	0.7	3.3	127 (52)	0.4	1.7	1.3	7.7	6 (4)	2.0	3.0	0.7	4.0
1991	51 (25)	0.4	3.5	2.2	9.5	23 (16)	1.3	2.5	0.8	4.3	127 (58)	0.4	2.4	1.0	7.7	13 (7)	0.4	1.6	0.9	2.9
1992	198 (75)	0.9	3.2	2.3	13.0	3 (3)	1.5	2.3	0.8	3.2	123 (66)	0.7	2.4	1.0	4.5	18 (11)	0.9	2.0	0.8	3.7
1993	104 (32)	1.1	3.0	2.4	9.7	10 (9)	0.7	1.5	0.6	2.5	148 (57)	0.4	1.7	0.8	4.4	51 (9)	0.7	1.7	0.7	5.6
1994	320 (60)	0.6	2.6	1.1	7.9	9 (9)	2.1	2.8	0.8	4.2	107 (48)	0.2	2.3	1.2	6.7	19 (12)	0.7	1.8	0.8	3.3
1995	159 (48)	0.8	2.2	0.9	6.0	6 (4)	1.7	1.9	0.2	2.2	58 (35)	0.6	1.9	0.8	3.5	15 (9)	0.3	1.2	0.8	3.1
1996	315 (59)	0.7	2.3	1.0	5.4	9 (7)	1.3	4.3	2.1	6.1	145 (51)	0.7	2.0	0.8	4.3	14 (10)	0.7	1.5	0.5	2.4
1997	223 (55)	0.5	2.6	1.3	7.6	17 (14)	1.3	2.3	0.7	3.5	113 (44)	0.9	2.0	0.9	4.7	8 (6)	1.5	2.2	0.3	2.5
1998	131 (50)	0.7	2.6	1.5	9.9	1 (1)	1.5	1.5	0.0	1.5	64 (31)	1.0	2.5	1.3	5.8	10 (4)	1.5	2.5	0.8	3.4
1999	179 (53)	0.7	2.8	1.0	8.3	8 (5)	2.5	3.9	1.1	5.1	108 (55)	0.7	2.4	1.7	10.0	1 (1)	3.5	3.5	0.0	3.5
2000	76 (33)	0.5	2.5	1.6	9.2	6 (6)	2.0	3.1	1.0	4.6	73 (31)	0.7	2.4	1.1	6.6	7 (6)	0.7	3.1	1.4	4.7
2001	167 (66)	0.7	2.4	1.2	7.6	10 (10)	1.1	1.7	0.5	2.5	111 (54)	0.5	2.5	1.0	6.7	3 (3)	0.9	1.2	0.2	1.3
2002	277 (107)	0.9	2.8	1.4	7.5	47 (27)	0.8	2.3	0.7	3.8	154 (67)	0.5	1.9	0.9	5.5	6 (4)	1.7	2.1	0.3	2.4
2003	337 (126)	0.8	2.4	1.1	6.3	10 (10)	1.5	2.4	0.5	3.1	118 (64)	0.8	2.1	1.2	5.8	12 (6)	0.8	1.8	0.8	3.6
2004	513 (158)	0.8	2.0	0.9	9.3	31 (24)	1.1	2.1	0.5	3.3	131 (67)	1.0	2.3	1.3	9.3	4 (3)	1.3	1.7	0.5	2.4
2005	251 (100)	0.1	2.2	0.9	4.6	10 (9)	1.1	2.2	0.5	3.0	127 (60)	0.4	2.1	0.9	4.8	11 (4)	0.1	2.2	1.1	3.3
2006	223 (79)	0.7	2.5	1.3	7.7	14 (13)	0.7	2.0	0.8	3.7	129 (72)	0.7	2.2	1.2	6.1	2 (2)	1.3	1.6	0.4	1.9
2007	365 (115)	0.8	2.1	0.8	5.5	98 (66)	0.9	2.3	0.7	4.9	193 (98)	0.9	2.1	0.9	4.9	8 (7)	1.3	1.6	0.3	2.2
2008	202 (69)	0.9	2.3	1.1	7.1	19 (14)	1.3	2.6	0.9	3.7	193 (84)	0.9	2.4	1.1	6.3	4 (3)	1.2	1.7	0.4	2.2
2009	436 (114)	0.6	2.0	0.8	5.8	103 (63)	1.0	2.0	0.5	3.3	246 (117)	0.7	2.2	1.0	7.1	24 (13)	0.9	1.7	0.4	2.3
2010	661 (131)	0.8	2.3	1.0	7.1	11 (10)	1.5	2.3	0.6	3.5	214 (90)	0.3	2.4	1.0	5.1	5 (4)	1.3	2.1	1.1	3.6
2011	513 (72)	0.7	2.2	0.8	6.4	23 (20)	1.3	2.6	0.9	5.3	146 (62)	1.0	2.5	0.9	5.3	2 (2)	2.3	2.7	0.5	3.0
2012	401 (104)	0.8	2.7	1.0	6.0	34 (23)	1.1	2.4	0.8	4.9	160 (69)	0.5	2.0	1.0	4.9	7 (6)	0.7	1.6	0.5	2.2
2013	546 (59)	0.9	2.2	0.7	6.1	8 (8)	0.8	1.8	0.6	2.6	215 (117)	0.6	2.1	1.0	6.9	19 (14)	1.0	1.9	0.6	3.1
2014	552 (133)	0.8	2.4	1.1	7.7	52 (37)	1.1	1.9	0.6	3.4	232 (100)	0.4	2.4	1.0	7.3	10 (8)	1.4	2.2	0.5	3.0
2015	288 (93)	0.6	2.5	1.0	7.7	32 (21)	0.7	2.1	0.9	4.4	118 (68)	1.0	2.4	0.9	5.6	6 (5)	0.9	1.3	0.4	1.8
2016	286 (89)	0.8	2.2	0.9	6.2	56 (34)	0.7	1.9	0.7	3.5	204 (89)	0.9	2.0	0.8	4.9	12 (10)	0.3	1.4	0.6	2.1
2017	416 (98)	0.9	2.1	0.9	5.7	135 (92)	0.6	1.8	0.4	3.2	309 (118)	0.9	1.9	0.7	8.5	12 (9)	0.9	1.8	0.7	3.2
2018	547 (112)	0.4	2.2	0.7	5.0	217 (56)	0.6	2.0	0.7	4.9	234 (106)	0.5	2.2	0.9	6.8	29 (13)	0.7	1.9	0.6	2.9
2019	761 (111)	0.7	2.2	1.0	9.9	105 (32)	0.6	2.4	0.9	5.5	192 (85)	0.4	2.3	1.1	7.7	9 (7)	1.0	2.9	1.2	5.5
2020	1,080 (162)	0.7	2.0	0.8	7.1	322 (69)	0.6	2.2	0.8	5.5	185 (73)	0.4	2.4	0.8	4.5	10 (2)	0.7	1.8	0.7	2.9
2021	563 (148)	0.8	2.3	1.0	6.9	156 (70)	0.6	2.4	0.9	5.5	326 (126)	0.5	2.6	1.1	5.8	5 (4)	1.2	2.2	1.0	3.2

Table 12. *Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Gray Triggerfish 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	18 (10)	230	379	80	500	18 (10)	0.4	2.9	1.5	5.6
1982	27 (16)	195	368	64	460	27 (16)	0.2	2.5	1.0	4.4
1983	28 (15)	208	286	57	430	28 (15)	0.4	1.5	0.7	3.4
1984	35 (20)	175	295	75	500	35 (20)	0.2	1.6	1.4	6.3
1985	35 (22)	200	296	64	485	35 (22)	0.2	1.4	1.2	5.3
1986	48 (36)	256	372	68	512	48 (36)	0.7	3.1	2.1	10.3
1987	66 (32)	195	336	65	490	66 (32)	0.2	2.3	1.3	5.1
1988	66 (42)	168	343	90	510	13 (9)	0.4	1.5	0.8	2.9
1989	186 (84)	242	365	67	520	185 (83)	0.5	2.8	1.7	7.9
1990	179 (81)	205	330	81	520	174 (80)	0.4	2.2	1.7	8.6
1991	215 (107)	202	360	59	570	214 (106)	0.4	2.6	1.5	9.5
1992	350 (161)	220	360	63	590	342 (155)	0.7	2.9	1.9	13.0
1993	313 (107)	211	332	60	532	313 (107)	0.4	2.1	1.6	9.7
1994	455 (129)	170	357	55	550	455 (129)	0.2	2.5	1.1	7.9
1995	238 (96)	149	330	48	482	238 (96)	0.3	2.0	0.9	6.0
1996	483 (127)	223	348	51	468	483 (127)	0.7	2.2	1.0	6.1
1997	361 (119)	211	345	47	548	361 (119)	0.5	2.4	1.2	7.6
1998	206 (86)	252	351	46	510	206 (86)	0.7	2.6	1.4	9.9
1999	296 (114)	219	357	57	538	296 (114)	0.7	2.7	1.3	10.0
2000	162 (76)	213	347	61	543	162 (76)	0.5	2.5	1.4	9.2
2001	291 (133)	252	347	46	538	291 (133)	0.5	2.4	1.1	7.6
2002	491 (208)	228	347	60	620	484 (205)	0.5	2.5	1.3	7.5
2003	477 (206)	230	333	51	490	477 (206)	0.8	2.3	1.1	6.3
2004	680 (253)	252	337	44	532	679 (252)	0.8	2.1	1.0	9.3
2005	403 (176)	125	340	47	454	399 (173)	0.1	2.1	0.9	4.8
2006	368 (166)	223	351	57	532	368 (166)	0.7	2.4	1.3	7.7
2007	664 (286)	250	346	39	477	664 (286)	0.8	2.1	0.8	5.5
2008	418 (170)	249	347	48	510	418 (170)	0.9	2.4	1.1	7.1
2009	809 (307)	217	337	42	520	809 (307)	0.6	2.0	0.8	7.1
2010	891 (235)	189	353	47	522	891 (235)	0.3	2.3	1.0	7.1
2011	684 (156)	250	351	42	494	684 (156)	0.7	2.3	0.8	6.4
2012	602 (202)	225	358	50	484	602 (202)	0.5	2.5	1.0	6.0
2013	788 (198)	210	343	41	512	788 (198)	0.6	2.2	0.8	6.9
2014	846 (278)	229	353	48	553	846 (278)	0.4	2.4	1.0	7.7
2015	444 (187)	233	355	46	518	444 (187)	0.6	2.4	1.0	7.7
2016	558 (222)	195	342	43	472	558 (222)	0.3	2.1	0.9	6.2
2017	872 (317)	229	340	39	545	872 (317)	0.6	2.0	0.8	8.5
2018	1,027 (287)	202	345	41	513	1,027 (287)	0.4	2.1	0.7	6.8
2019	1,067 (235)	197	346	44	530	1,067 (235)	0.4	2.3	1.0	9.9

	Length					Weight				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2020	1,597 (306)	197	342	41	524	1,597 (306)	0.4	2.1	0.8	7.1
2021	1,050 (348)	229	354	47	518	1,050 (348)	0.5	2.4	1.0	6.9

Table 13. *Estimated average weights of landed Gray Triggerfish 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. MRIP Headboat estimates are included from Virginia to Maine.*

	Cbt			CbtHbt			Hbt			Priv			Shore			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
1981	3.58	0.00	0	0.00	0.00	0				2.76	0.25	8 (16)	2.11	0.00	1 (1)	2.75	0.21	9 (17)
1982	2.11	0.00	0	2.23	0.00	1 (1)				2.69	0.11	10 (21)	1.94	0.64	3 (3)	2.37	0.13	14 (25)
1983	1.58	0.00	1 (1)	2.23	0.00	0				1.42	0.21	7 (17)	2.09	0.21	2 (2)	1.69	0.17	10 (20)
1984	2.74	0.25	3 (3)	0.00	0.00	0				1.29	0.20	9 (19)	1.47	0.19	3 (6)	1.44	0.21	15 (28)
1985	2.06	0.00	1 (1)	2.23	0.18	3 (5)				0.80	0.11	13 (22)	0.88	0.00	1 (1)	0.96	0.16	18 (29)
1986	2.37	0.40	3 (5)	4.15	0.30	2 (2)				2.62	0.14	25 (34)	0.00	0.00	0	2.66	0.14	30 (41)
1987	1.85	0.26	7 (17)	2.73	0.00	1 (2)				1.95	0.12	21 (42)	2.71	0.45	3 (5)	2.17	0.10	32 (66)
1988	2.28	0.05	2 (2)	0.00	0.00	0				1.81	0.21	7 (11)	2.28	0.00	0	2.00	0.17	9 (13)
1989	3.78	0.15	14 (36)	3.05	0.09	13 (15)				1.82	0.08	52 (129)	1.95	0.17	4 (5)	1.96	0.06	83 (185)
1990	3.89	0.13	18 (32)	2.40	0.09	6 (9)				1.38	0.09	52 (127)	3.06	0.14	4 (6)	1.57	0.08	80 (174)
1991	2.58	0.13	25 (51)	2.43	0.08	16 (23)				2.35	0.06	58 (127)	2.48	0.24	7 (13)	2.42	0.06	106 (214)
1992	2.99	0.08	75 (198)	2.31	0.21	3 (3)				2.55	0.05	66 (123)	2.89	0.11	11 (18)	2.72	0.05	155 (342)
1993	2.95	0.10	32 (104)	1.75	0.13	9 (10)				1.58	0.06	57 (148)	1.65	0.18	9 (51)	1.70	0.06	107 (313)
1994	2.38	0.04	60 (320)	2.14	0.10	9 (9)				1.83	0.09	48 (107)	2.05	0.13	12 (19)	1.99	0.04	129 (455)
1995	1.97	0.06	48 (159)	2.22	0.06	4 (6)				1.96	0.06	35 (58)	2.00	0.23	9 (15)	1.97	0.04	96 (238)
1996	2.46	0.05	52 (282)	2.54	0.21	7 (9)				2.27	0.05	51 (145)	2.40	0.11	10 (14)	2.31	0.04	120 (450)
1997	2.82	0.07	54 (219)	2.10	0.07	14 (17)				1.77	0.06	43 (108)	2.29	0.07	6 (8)	2.10	0.05	117 (352)
1998	2.52	0.09	50 (131)	2.52	0.00	1 (1)				2.49	0.09	31 (64)	2.39	0.06	4 (10)	2.48	0.06	86 (206)
1999	2.79	0.06	53 (179)	2.23	0.13	5 (8)				2.27	0.11	55 (108)	2.46	0.00	1 (1)	2.34	0.06	114 (296)
2000	2.05	0.11	33 (76)	3.20	0.13	6 (6)				1.99	0.10	31 (73)	2.69	0.21	6 (7)	2.19	0.06	76 (162)
2001	2.49	0.06	66 (167)	2.18	0.08	10 (10)				2.48	0.05	54 (111)	2.34	0.12	3 (3)	2.47	0.04	133 (291)
2002	3.05	0.04	107 (277)	2.08	0.05	27 (47)				1.83	0.06	67 (154)	2.19	0.07	4 (6)	2.08	0.03	205 (484)
2003	2.43	0.04	126 (337)	2.22	0.07	10 (10)				2.12	0.07	64 (118)	2.41	0.23	6 (12)	2.18	0.03	206 (477)
2004	1.96	0.04	158 (513)				2.29	0.05	24 (31)	2.21	0.07	67 (131)	2.29	0.17	3 (4)	2.19	0.03	252 (679)
2005	2.46	0.04	100 (251)				2.15	0.08	9 (10)	2.15	0.06	60 (127)	2.33	0.38	4 (11)	2.21	0.03	173 (399)
2006	2.38	0.05	79 (223)				2.34	0.11	13 (14)	1.97	0.06	72 (129)	2.08	0.19	2 (2)	2.01	0.04	166 (368)
2007	1.99	0.03	115 (365)				2.02	0.04	66 (98)	2.04	0.04	98 (193)	2.17	0.07	7 (8)	2.03	0.02	286 (664)

	Cbt			CbtHbt			Hbt			Priv			Shore			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
2008	2.38	0.05	69 (202)				2.18	0.09	14 (19)	2.27	0.05	84 (193)	2.38	0.12	3 (4)	2.28	0.03	170 (418)
2009	1.91	0.03	114 (436)				2.12	0.03	63 (103)	2.21	0.04	117 (246)	1.94	0.05	13 (24)	2.15	0.02	307 (809)
2010	2.38	0.03	131 (661)				2.08	0.09	10 (11)	2.30	0.04	90 (214)	2.11	0.25	4 (5)	2.29	0.02	235 (891)
2011	2.17	0.04	72 (513)				2.82	0.08	20 (23)	2.63	0.05	62 (146)	2.41	0.12	2 (2)	2.57	0.03	156 (684)
2012	2.70	0.03	104 (401)				2.48	0.08	23 (34)	2.22	0.05	69 (160)	2.12	0.15	6 (7)	2.28	0.03	202 (602)
2013	2.21	0.04	59 (546)				2.05	0.11	8 (8)	2.17	0.04	117 (215)	2.25	0.08	14 (19)	2.18	0.03	198 (788)
2014	2.36	0.03	133 (552)				2.08	0.05	37 (52)	2.42	0.03	100 (232)	2.19	0.07	8 (10)	2.38	0.02	278 (846)
2015	2.68	0.04	93 (288)				2.07	0.08	21 (32)	2.61	0.05	68 (118)	2.54	0.14	5 (6)	2.61	0.03	187 (444)
2016	2.29	0.04	89 (286)				1.95	0.07	34 (56)	1.92	0.04	89 (204)	2.15	0.13	10 (12)	1.94	0.03	222 (558)
2017	2.23	0.04	98 (416)				1.78	0.02	92 (135)	1.96	0.04	118 (309)	1.91	0.12	9 (12)	1.99	0.02	317 (872)
2018	2.19	0.02	120 (547)				2.09	0.03	101 (217)	2.30	0.03	111 (234)	2.25	0.10	14 (29)	2.27	0.02	346 (1,027)
2019	2.22	0.03	121 (761)				2.50	0.04	70 (105)	2.38	0.05	87 (192)	2.51	0.06	7 (9)	2.36	0.02	285 (1,067)
2020	2.28	0.02	179 (1,080)				2.23	0.03	171 (322)	2.59	0.03	81 (185)	2.31	0.21	6 (10)	2.53	0.02	437 (1,597)
2021	2.36	0.03	148 (563)				2.55	0.03	102 (156)	2.60	0.03	126 (326)	2.50	0.17	4 (5)	2.58	0.02	380 (1,050)

Table 14. *Resolution of landings-in-weight estimates (pounds whole weight) for South Atlantic Gray Triggerfish 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, Appendix A). 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	sr	sry	srys	srysm	srysmw	srysmwa
1981	18 (10)	0	209,317	12,933	0	268,319	0
1982	27 (16)	1,130	7,996	73,930	107,695	26,742	0
1983	28 (15)	114,778	122	24,822	75,619	0	0
1984	35 (20)	7,032	4,577	195,490	115,720	0	0
1985	35 (22)	12,768	9,596	18,859	58,751	0	0
1986	48 (36)	11,671	80,153	248	105,111	0	0
1987	66 (32)	0	12,755	188,324	111,942	3,459	0
1988	13 (9)	262,381	0	0	62,251	0	0
1989	185 (83)	5,601	74,678	105,241	167,185	84,286	127,566
1990	174 (80)	1,995	48,447	69,705	208,754	1,641	38,619
1991	214 (106)	2,623	104,175	818,337	445,748	103,645	66,968
1992	342 (155)	4,177	61,873	374,828	159,079	72,435	104,813
1993	313 (107)	1,129	71,087	42,790	137,397	50,092	173,776
1994	455 (129)	4,283	9,670	137,885	79,646	9,647	106,732
1995	238 (96)	0	136,923	44,617	59,690	23,297	11,944
1996	483 (127)	14,777	230,814	132,620	127,213	3,593	37,624
1997	361 (119)	6,051	49,215	877,595	105,919	41,170	91,376
1998	206 (86)	55,092	0	45,059	154,593	0	6,895
1999	296 (114)	3,535	2,963	16,261	110,063	76,002	74,903
2000	162 (76)	0	95,008	41,545	121,417	20,707	3,372
2001	291 (133)	0	82,191	6,993	141,389	66,696	19,763
2002	484 (205)	5,462	90,726	92,740	42,525	143,693	170,951
2003	477 (206)	10,637	73,231	70,675	72,743	40,611	273,475
2004	679 (252)	21,165	86,534	211,596	197,746	113,433	102,839
2005	399 (173)	6	166,026	58,505	50,836	161,276	126,455
2006	368 (166)	0	16,375	50,807	51,012	253,607	150,425
2007	664 (286)	6,809	24,852	167,498	116,409	171,825	435,618
2008	418 (170)	0	4,560	178,235	214,760	77,971	291,796
2009	809 (307)	1,265	48,308	280,394	409,467	265,541	296,661
2010	891 (235)	64	151,439	57,371	276,622	81,214	335,629
2011	684 (156)	3,347	9,872	86,223	59,630	167,322	295,869
2012	602 (202)	3,182	55,465	350,860	97,327	79,331	156,843
2013	788 (198)	3,951	46,711	115,120	149,828	77,559	292,633
2014	846 (278)	9,591	137,229	384,011	268,908	73,766	485,364
2015	444 (187)	26,094	25,400	93,816	281,565	9,658	154,995
2016	558 (222)	11,151	51,048	117,974	185,121	50,034	1,136,748
2017	872 (317)	0	38,178	139,327	263,400	91,807	536,609

		AB1.lbs					
Year	N	sr	sry	srys	srysm	srysmw	srysmwa
2018	1,027 (287)	0	28,450	198,969	156,058	59,495	463,113
2019	1,067 (235)	9,466	0	172,999	195,798	162,633	528,924
2020	1,597 (306)	0	1,986	95,609	972,991	9,308	466,792
2021	1,050 (348)	0	17,993	65,599	257,117	273,772	903,670

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 Gray Triggerfish.*

Year	FLKeys	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	Total
1981	4,087,356	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	90,414,541
1982	4,126,072	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	104,385,646
1983	4,536,545	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	104,921,773
1984	6,597,179	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	105,645,482
1985	3,344,156	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	102,294,800
1986	2,045,161	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	104,007,580
1987	4,818,584	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	106,998,494
1988	3,428,017	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	102,229,179
1989	4,735,258	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	104,239,601
1990	4,190,519	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	108,164,859
1991	9,796,902	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	117,105,452
1992	5,372,429	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	114,204,048
1993	6,237,753	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	116,141,361
1994	5,114,358	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	115,724,956
1995	5,719,470	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	113,619,767
1996	6,595,290	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	118,407,770
1997	5,027,584	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	122,279,381
1998	4,075,040	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	120,403,246
1999	3,661,112	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	125,032,092
2000	2,940,339	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	135,288,072
2001	3,250,891	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	138,710,770
2002	2,004,492	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	137,949,745
2003	2,827,229	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	142,528,199
2004	4,687,327	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	145,290,552
2005	2,394,525	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	149,818,639
2006	2,112,327	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	152,961,063
2007	3,262,066	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	152,515,513
2008	4,563,931	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	154,648,003
2009	2,251,195	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	156,252,151
2010	1,922,802	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	161,193,108
2011	2,339,547	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	155,498,580

Year	FLKeys	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	Total
2012	3,450,091	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	148,450,781
2013	3,797,787	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	143,137,665
2014	3,544,628	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	149,361,058
2015	3,280,973	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	143,699,177
2016	2,705,262	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	141,615,392
2017	2,501,323	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	142,124,842
2018	2,729,023	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	131,964,013
2019	2,389,337	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	131,903,400
2020	3,405,013	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	139,002,707
2021	3,128,493	42,051,994	5,186,277	11,944,761	17,944,614	7,129,056	8,090,729	2,406,536	13,210,781	12,006,937	140,059,654

Table 15 continued. *Recreational Fishing Effort (in angler trips) for Atlantic anglers by state and year.*

Year	CT	RI	MA	NH	ME	Total
1981	2,954,427	2,300,146	7,178,372	265,333	831,193	90,414,541
1982	3,624,545	2,376,742	7,739,640	398,632	854,713	104,385,646
1983	2,854,642	2,402,982	7,605,994	297,865	747,618	104,921,773
1984	2,861,108	2,277,784	7,174,314	326,974	817,758	105,645,482
1985	2,868,047	2,680,446	7,483,184	166,322	913,021	102,294,800
1986	2,783,825	2,339,860	7,141,469	360,638	881,199	104,007,580
1987	2,842,968	2,523,175	6,410,706	343,612	923,655	106,998,494
1988	2,995,841	2,403,935	6,726,787	393,777	1,039,538	102,229,179
1989	3,066,939	2,660,656	6,670,771	445,789	1,100,369	104,239,601
1990	3,015,176	2,881,911	7,680,583	406,677	1,177,120	108,164,859
1991	3,056,585	2,682,671	7,867,719	390,620	1,345,994	117,105,452
1992	2,934,464	2,666,256	8,265,920	356,025	1,213,038	114,204,048
1993	2,779,149	2,549,680	8,766,087	456,370	1,379,767	116,141,361

Year	CT	RI	MA	NH	ME	Total
1994	2,763,578	2,642,026	9,393,081	597,307	1,336,317	115,724,956
1995	2,754,332	2,883,069	9,214,765	555,159	1,413,367	113,619,767
1996	2,909,421	2,797,720	9,476,761	586,679	1,361,010	118,407,770
1997	2,947,626	3,379,408	9,914,061	584,294	1,493,363	122,279,381
1998	3,093,446	3,789,827	10,026,868	624,017	1,406,941	120,403,246
1999	3,264,797	4,376,655	10,043,973	612,300	1,498,720	125,032,092
2000	3,152,493	4,326,027	10,652,619	647,212	1,675,704	135,288,072
2001	3,315,755	4,834,180	11,504,708	655,208	1,663,444	138,710,770
2002	3,342,254	4,636,125	11,483,210	843,967	1,841,272	137,949,745
2003	3,260,306	4,636,615	11,084,074	851,155	2,118,776	142,528,199
2004	3,181,184	4,666,310	11,746,505	869,049	2,008,986	145,290,552
2005	3,246,157	4,187,656	11,638,548	947,950	2,323,431	149,818,639
2006	3,162,606	4,282,997	12,005,419	882,560	2,369,389	152,961,063
2007	3,309,176	3,579,651	12,197,090	863,489	2,052,329	152,515,513
2008	3,568,590	3,658,000	12,605,363	865,157	2,405,082	154,648,003
2009	3,387,779	4,062,597	12,951,528	834,862	2,637,343	156,252,151
2010	3,696,314	4,154,975	14,157,846	787,908	2,057,967	161,193,108
2011	3,478,843	3,749,950	13,461,841	809,873	1,770,962	155,498,580
2012	3,734,050	3,956,500	12,221,447	857,582	1,768,409	148,450,781
2013	3,506,048	3,315,911	10,125,392	906,394	1,895,653	143,137,665
2014	3,640,810	3,350,834	8,807,604	954,392	1,976,235	149,361,058
2015	3,843,978	3,133,628	7,282,289	980,936	1,704,647	143,699,177
2016	4,229,759	2,998,761	7,244,235	1,060,766	1,948,397	141,615,392
2017	3,937,262	2,317,766	7,774,866	972,380	1,747,568	142,124,842
2018	3,542,791	2,553,265	6,705,398	676,086	1,626,150	131,964,013
2019	3,766,030	3,739,018	7,422,488	609,003	1,674,933	131,903,400
2020	4,195,554	2,848,179	5,949,641	920,293	2,110,112	139,002,707
2021	3,712,121	3,507,189	7,284,793	715,094	1,740,279	140,059,654

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 Gray Triggerfish. MRIP Headboat estimates are included from Virginia to Maine.*

Year	Cbt	Cbt/Hbt	Hbt	Priv	Shore	Total
1981	443,445	2,675,775		26,243,346	61,051,974	90,414,540
1982	543,344	3,948,081		28,814,670	71,079,552	104,385,647
1983	549,886	3,086,778		28,359,367	72,925,742	104,921,773
1984	631,740	2,194,594		32,550,446	70,268,700	105,645,480
1985	647,288	2,199,145		32,813,013	66,635,354	102,294,800
1986	734,582	2,555,264		33,714,334	67,003,400	104,007,580
1987	684,175	1,749,097		33,995,973	70,569,249	106,998,494
1988	574,659	1,799,234		31,172,800	68,682,483	102,229,176
1989	703,403	1,599,779		33,035,097	68,901,320	104,239,599
1990	594,310	1,684,311		33,031,502	72,854,735	108,164,858
1991	615,933	1,856,123		35,195,540	79,437,858	117,105,454
1992	574,093	1,566,647		35,351,776	76,711,530	114,204,046
1993	617,079	2,195,281		37,064,297	76,264,706	116,141,363
1994	632,200	1,855,960		37,251,603	75,985,191	115,724,954
1995	647,404	1,973,135		36,404,884	74,594,344	113,619,767
1996	632,194	1,652,562		38,414,584	77,708,431	118,407,771
1997	574,241	1,733,223		40,634,525	79,337,393	122,279,382
1998	618,206	1,481,991		40,307,829	77,995,218	120,403,244
1999	555,961	1,452,480		42,159,862	80,863,789	125,032,092
2000	514,365	1,530,369		47,327,712	85,915,626	135,288,072
2001	600,971	1,601,931		47,066,544	89,441,326	138,710,772
2002	693,754	1,436,232		48,316,477	87,503,283	137,949,746
2003	658,098	1,579,900		50,746,742	89,543,460	142,528,200
2004	1,393,761		674,260	51,084,719	92,137,812	145,290,552
2005	1,574,278		767,540	52,105,095	95,371,726	149,818,639
2006	1,340,345		649,374	54,519,616	96,451,728	152,961,063
2007	1,818,780		971,084	56,050,865	93,674,785	152,515,514
2008	1,362,263		871,784	54,684,210	97,729,745	154,648,002
2009	1,365,822		790,333	56,034,342	98,061,652	156,252,149
2010	1,097,737		580,114	60,092,042	99,423,215	161,193,108
2011	1,319,030		600,817	55,943,541	97,635,193	155,498,581
2012	1,266,240		628,596	53,645,542	92,910,405	148,450,783
2013	1,426,349		968,396	52,164,168	88,578,752	143,137,665
2014	1,484,941		831,745	52,707,034	94,337,336	149,361,056
2015	1,644,964		696,087	49,242,699	92,115,428	143,699,178
2016	1,171,084		470,309	48,278,000	91,695,999	141,615,392
2017	1,185,535		596,982	47,882,656	92,459,668	142,124,841
2018	1,234,904		535,555	44,545,369	85,648,186	131,964,014
2019	1,561,034		598,715	44,517,675	85,225,976	131,903,400
2020	1,158,206		496,200	48,126,125	89,222,176	139,002,707
2021	1,697,997		495,785	45,904,351	91,961,520	140,059,653

Table 17. *Catch estimates for the South Atlantic leatherjacket family (UNID CATCH) and estimates of the relative contribution of gray triggerfish to this catch (Ratio). Ratios are the average catch of gray triggerfish relative to all triggerfish species (gray triggerfish, ocean triggerfish, queen triggerfish) and are provided for individual years (1981-2021) and across all years (Grand Total).*

	UNID CATCH		Ratio	
Year	AB1	B2	%AB1	%B2
1981	4,933	22,131	0.569	0.589
1982	3,464	16,483	0.601	0.574
1983	10,249	476,129	0.624	0.256
1984	31,407	76,366	0.933	0.156
1985	12,951	900	0.453	0.974
1986	4,113	130	0.600	0.905
1987	17,978	148,954	0.778	0.971
1988	141	42,733	0.639	0.920
1989	69,577	169,761	0.868	1.000
1990	0	18,639	0.992	0.998
1991	27,977	5,120	0.999	0.997
1992	10,687	57,295	0.923	0.976
1993	6,640	28,765	0.867	0.670
1994	13,385	21,556	0.824	0.774
1995	9,969	83,910	0.605	0.871
1996	5,142	39,238	0.924	0.850
1997	4,603	21,925	0.943	0.845
1998	0	28,438	0.875	0.611
1999	0	23,378	0.786	0.916
2000	13,975	56,308	0.841	0.667
2001	4	26,618	0.940	0.754
2002	8,783	45,443	0.906	0.902
2003	5,952	48,997	0.972	0.995
2004	10,011	82,273	0.977	0.975
2005	16,178	71,541	0.959	0.988
2006	7,504	45,854	0.986	0.951
2007	11,285	12,831	0.984	0.965
2008	3,913	2,787	0.927	0.911
2009	65	3,593	0.809	0.999
2010	2,123	29,356	0.991	0.861
2011	7,810	14,739	0.991	0.969
2012	30,943	14,993	0.885	0.941
2013	1,641	73,940	0.878	0.963
2014	0	68,366	0.954	0.820
2015	547	9,260	0.914	0.982
2016	0	95,421	0.963	1.000
2017	6,739	13,878	0.881	0.973
2018	0	40,277	0.925	0.961
2019	5,168	29,841	0.968	0.998
2020	7,574	9,410	0.967	0.948

	UNID CATCH		Ratio	
Year	AB1	B2	%AB1	%B2
2021	0	51,912	0.934	0.955
Grand Total	373,429	2,129,489	0.892	0.939

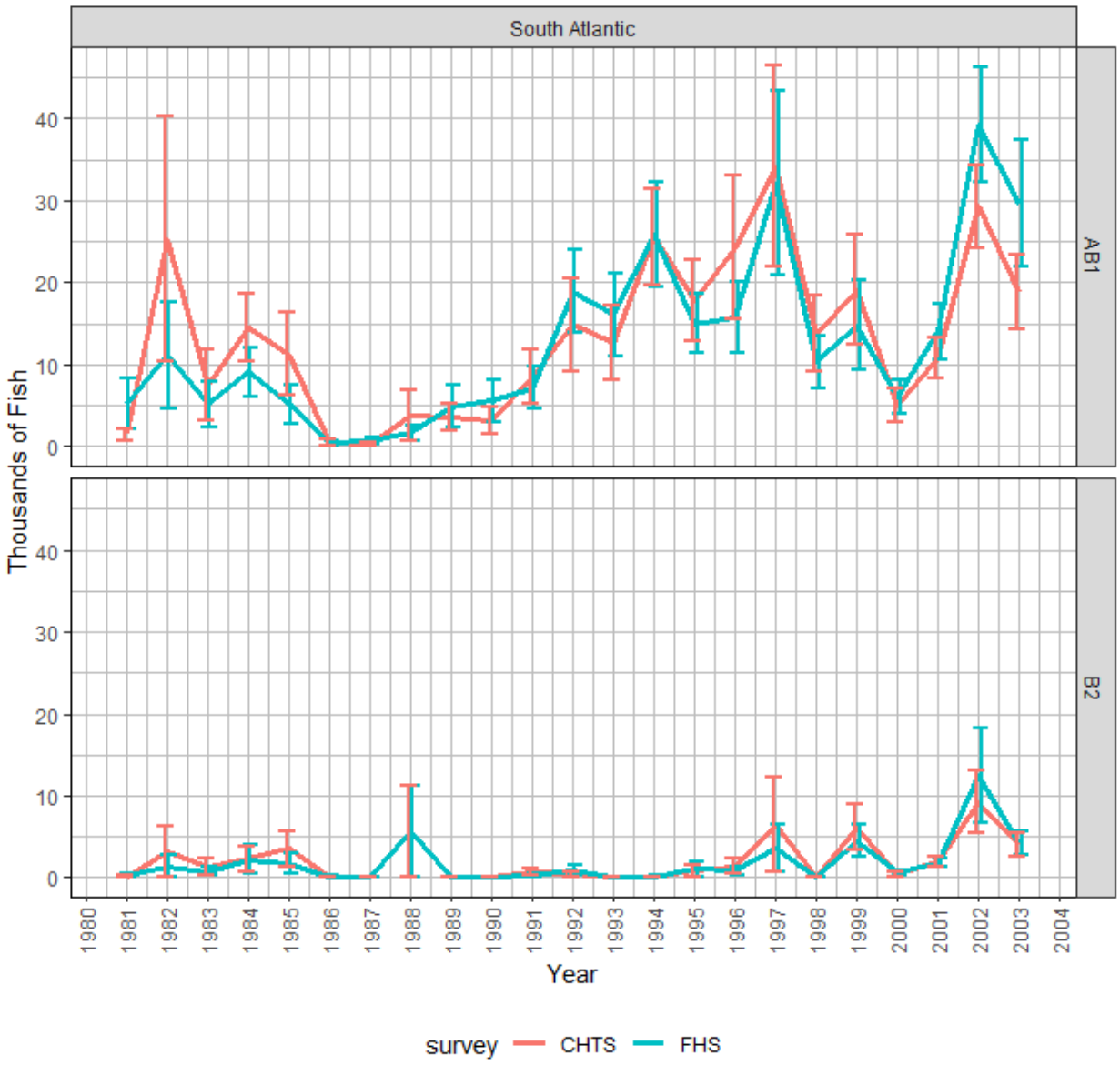

Figure 1. *Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Gray Triggerfish from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the South Atlantic between 1981 and 2003 (MRIP). The charterboat calibration approach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

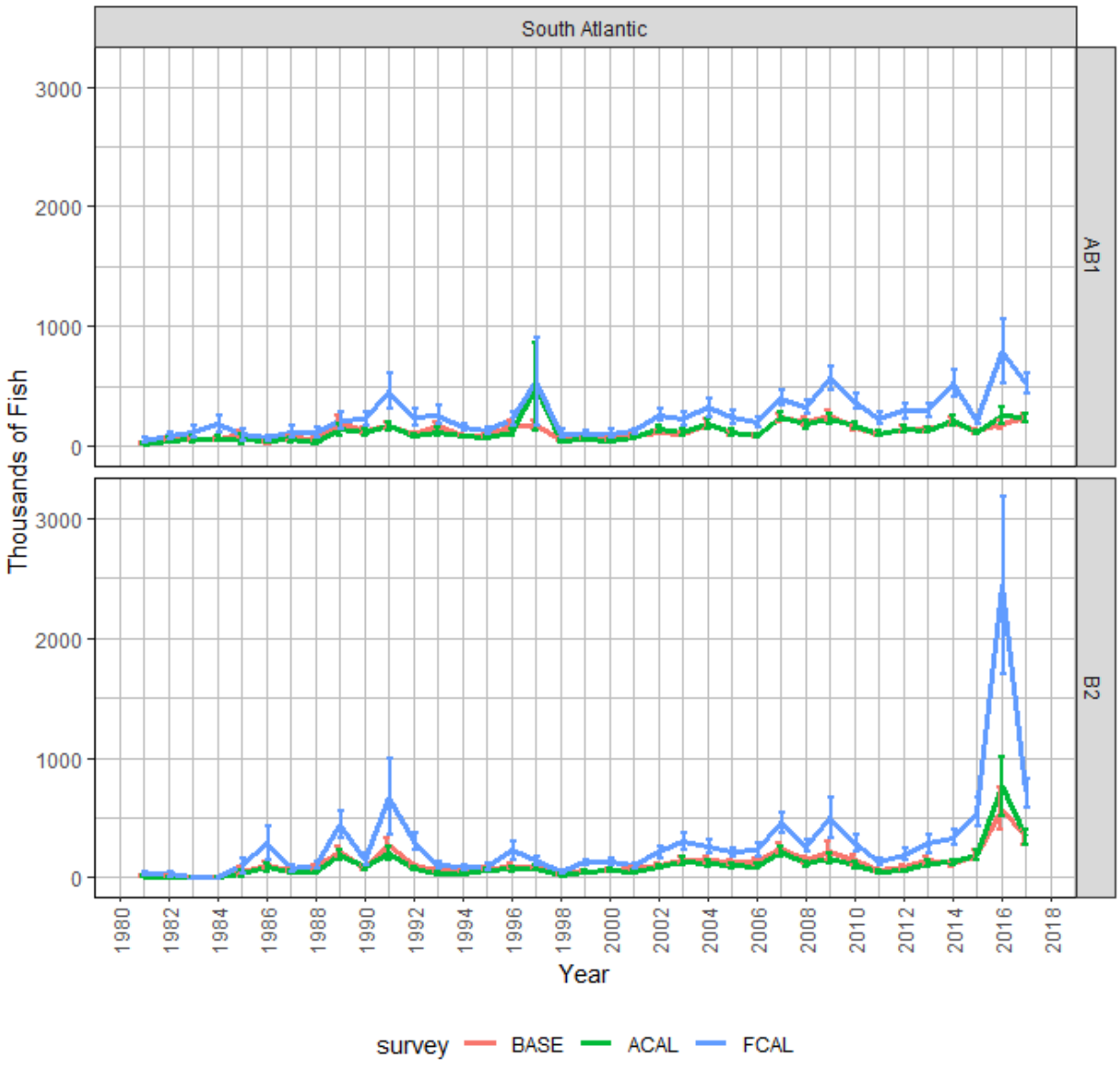

Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Gray Triggerfish in the Atlantic between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure do not include the Florida Keys as that domain is not available from the MRIP online comparison tool (NMFS).*

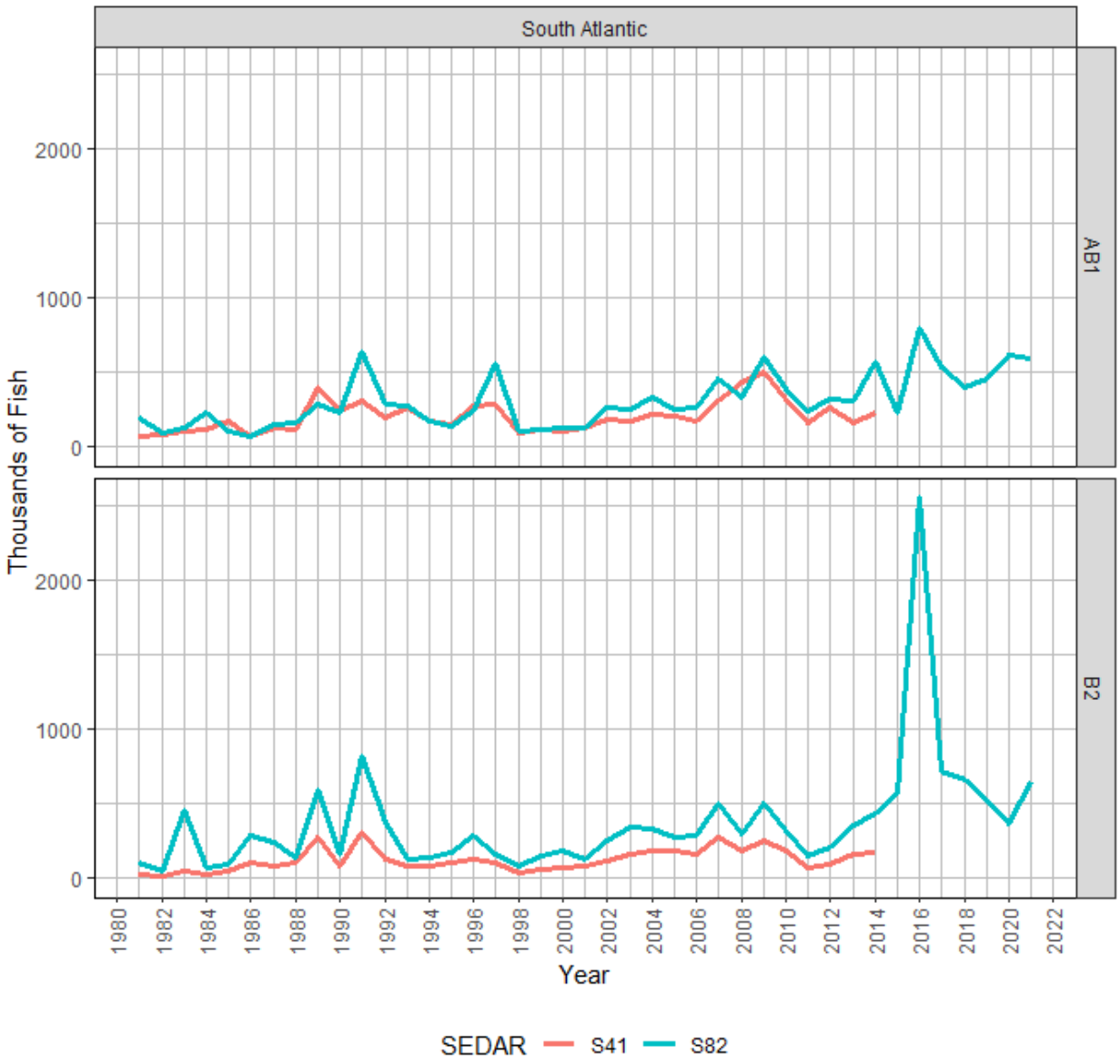

Figure 3. *Comparison of total general recreational landings (AB1) and discard estimates (B2) for South Atlantic gray triggerfish between SEDAR 82 and SEDAR 41, the terminal years of which are 2021 and 2014 respectively. Differences in catch estimates, which are in thousands of fish, are largely a function of changes in the MRIP survey (i.e., FES in 2018).*

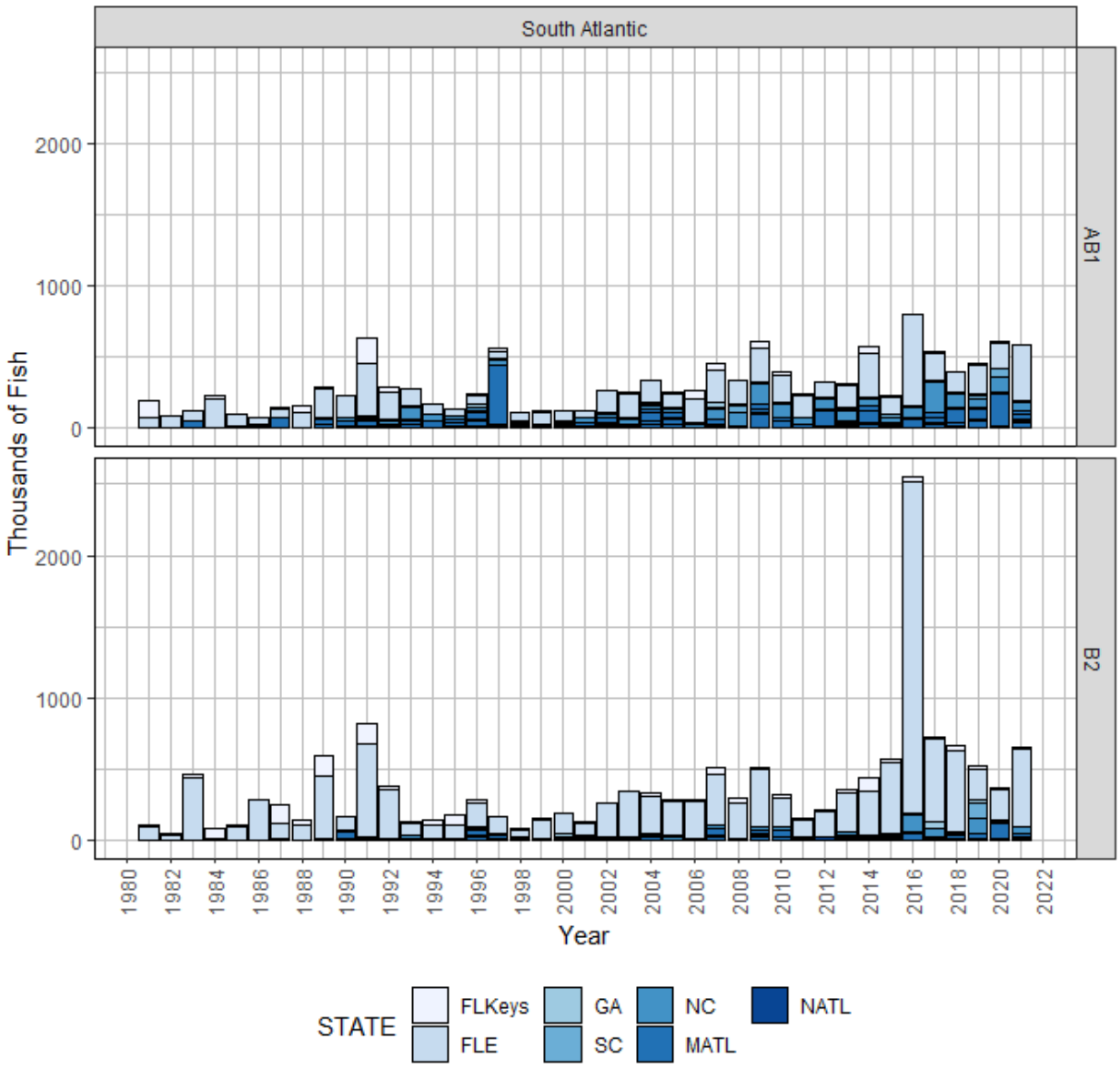

Figure 4. *Annual Gray Triggerfish landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2021 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states contributed less than ten percent to the total catch (Fig4a) and were combined for plotting purposes.*

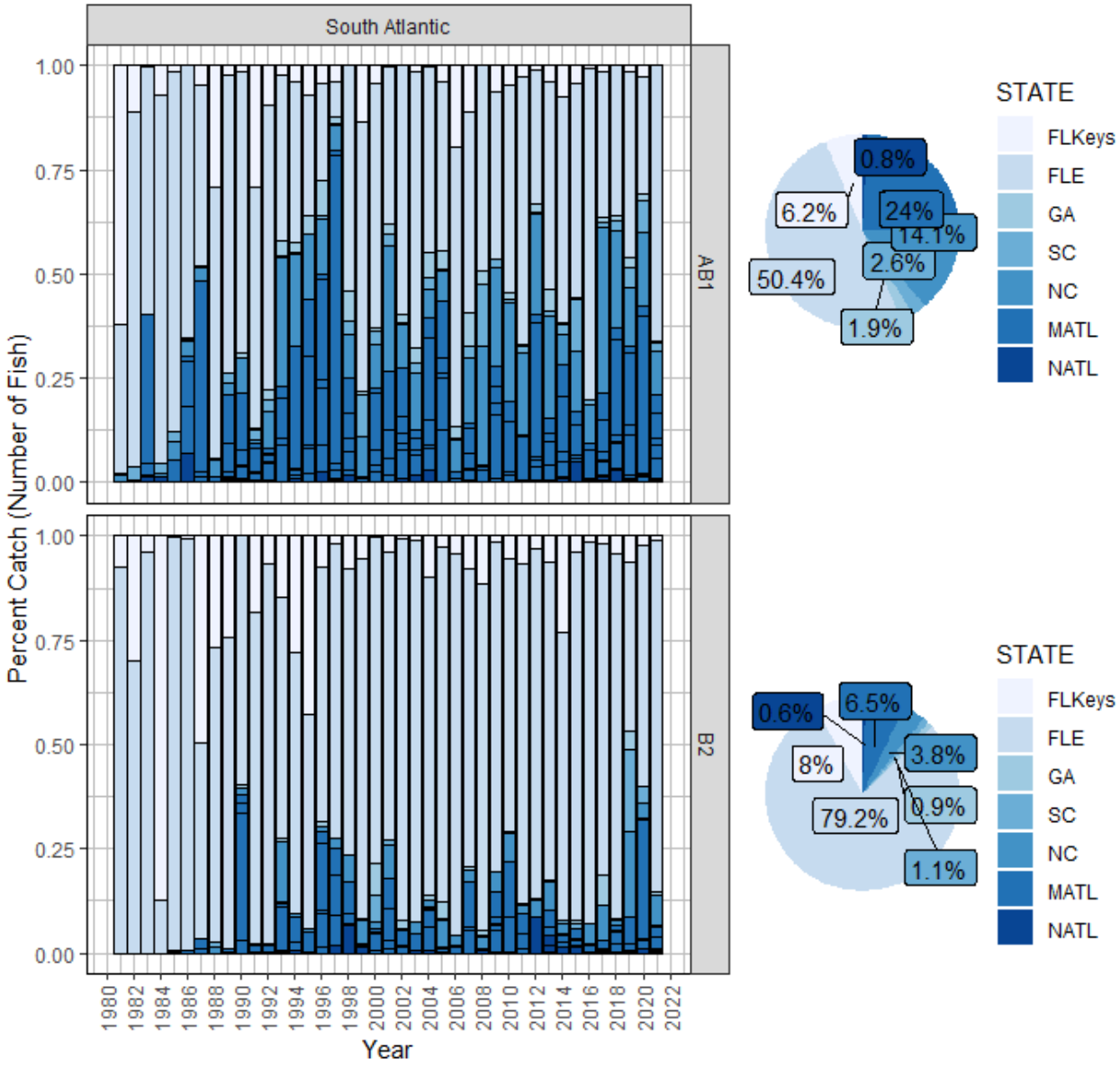

Figure 4a. *Percent of Gray Triggerfish landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP). Mid Atlantic (MATL; VA to NY) and North Atlantic (NATL; CT to ME) states were combined for plotting purposes.*

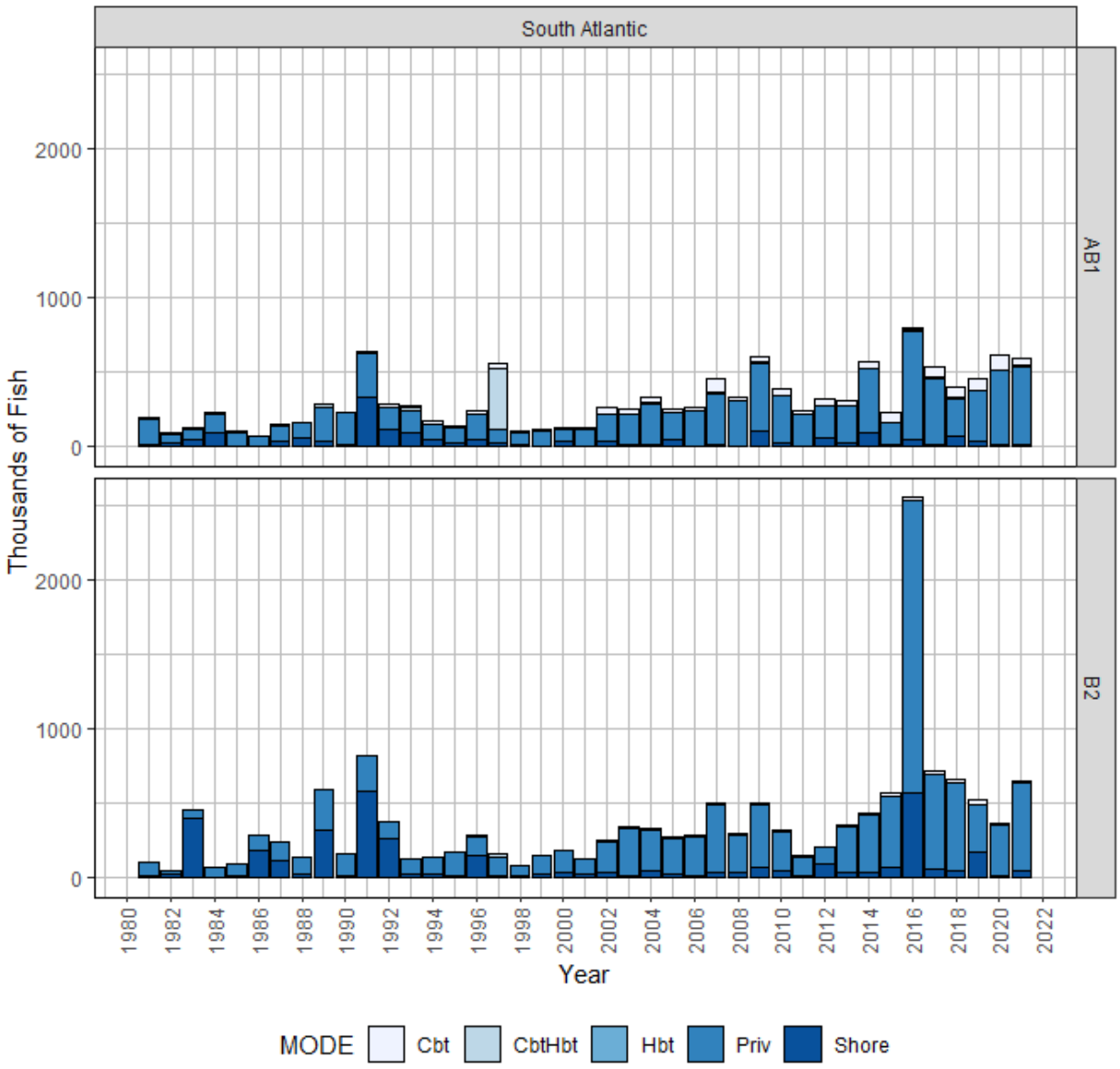

Figure 5. *Annual Gray Triggerfish landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.*

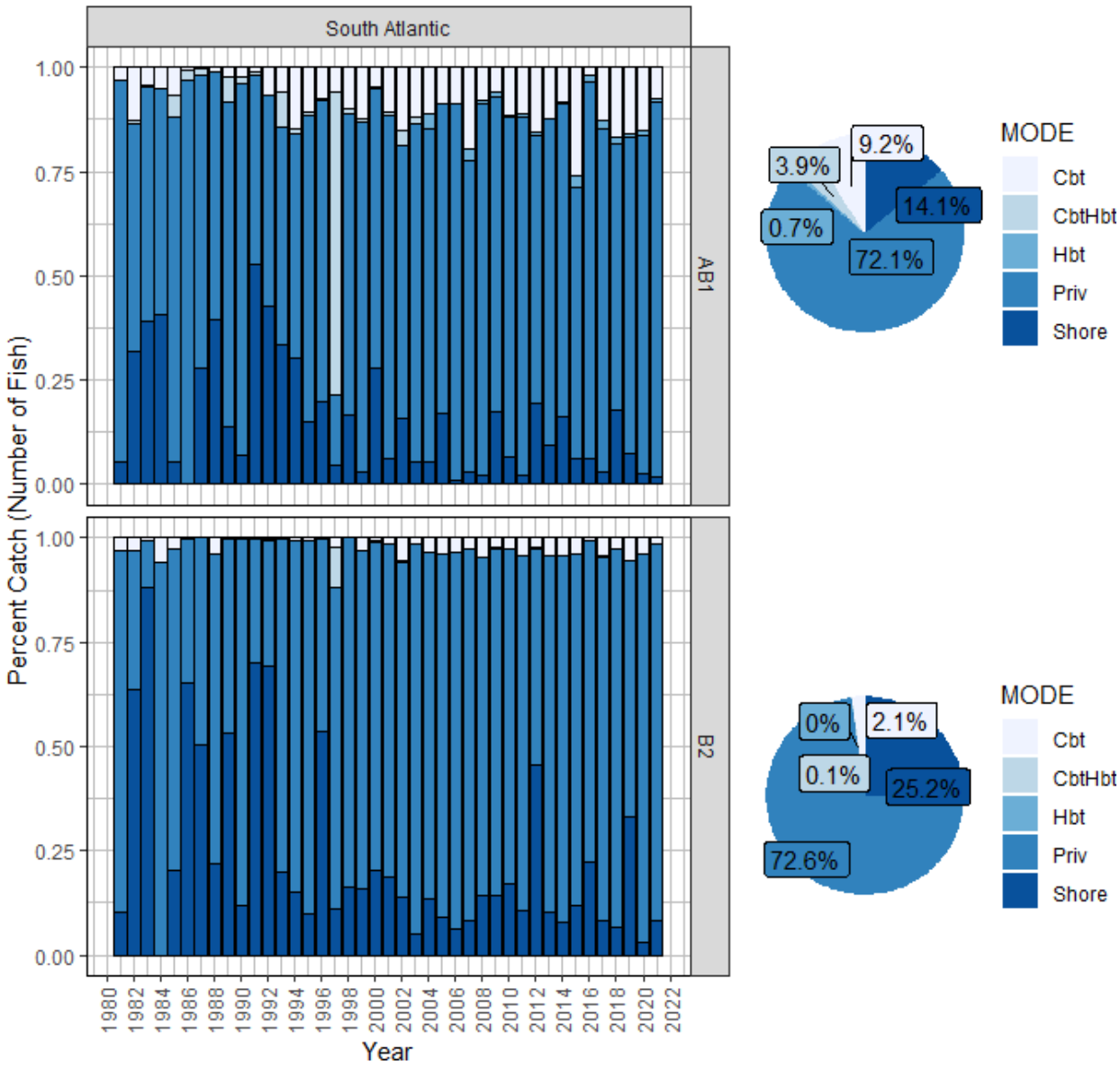

Figure 5a. *Percent of Gray Triggerfish landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.*

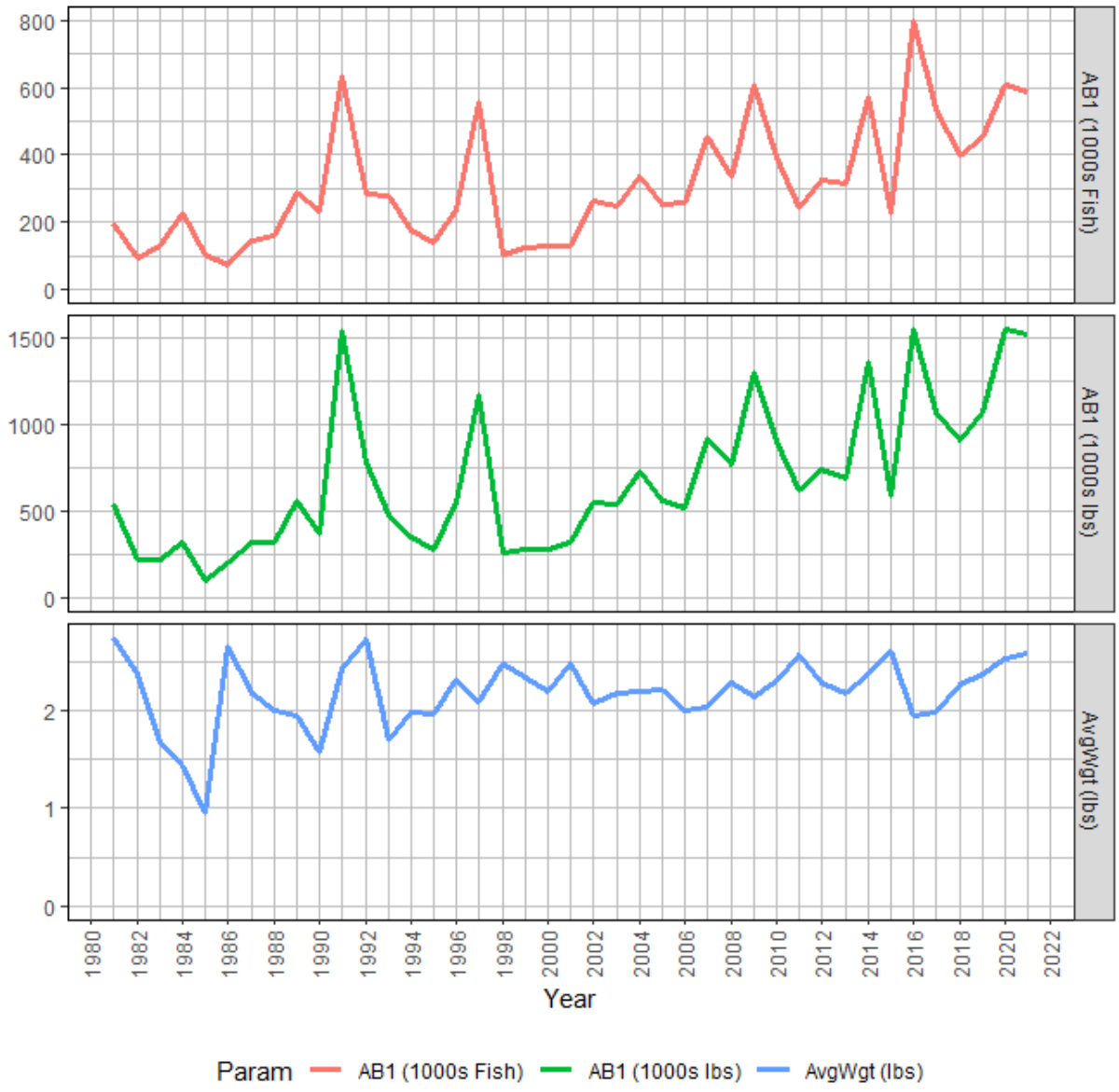

Figure 6. *Estimates of annual landings for Gray Triggerfish in the South Atlantic (MRIP): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates 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, Appendix A).*

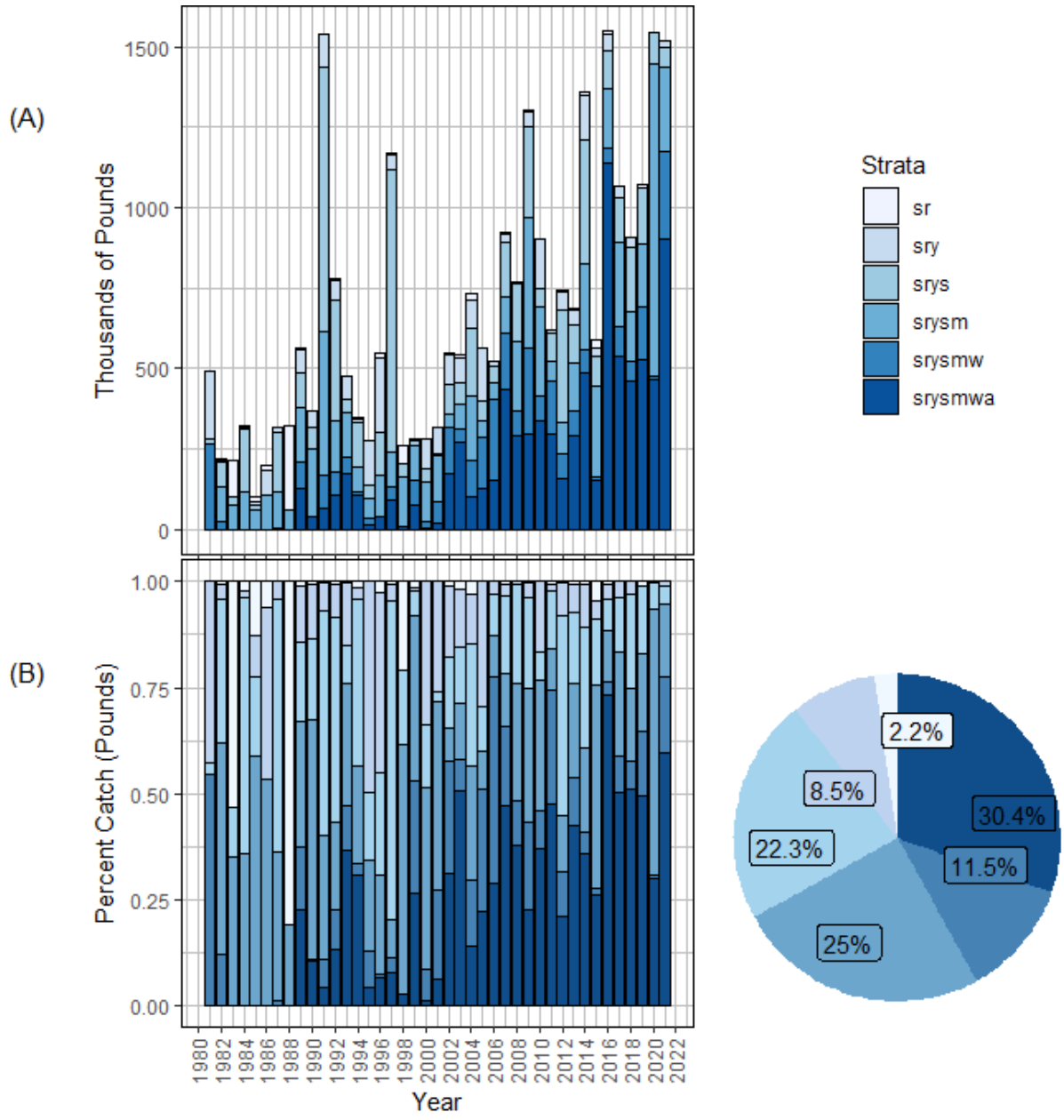

Figure 7. *Annual landings estimates of South Atlantic Gray Triggerfish in thousands of pounds whole weight by hierarchy level (MRIP), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata at which average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

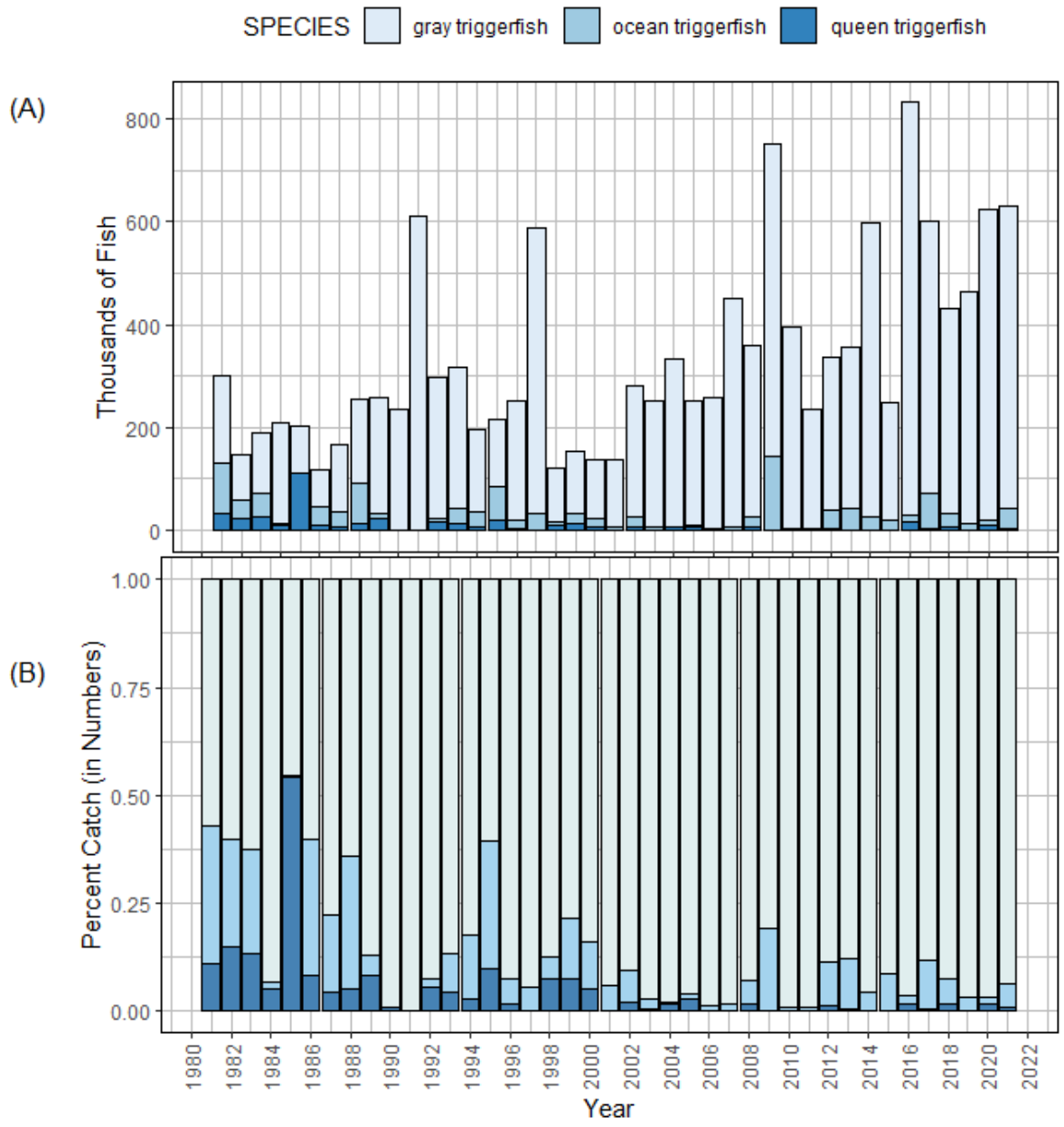

Figure 8. *Annual landings estimates for all South Atlantic triggerfish species in thousands of fish (MRIP). Landings are summarized by year and provided (A) in absolute units and (B) as a percentage of the total landings.*

(A)

Wave	Cbt		Hbt		Priv		Shore	
	RAW	IMP	RAW	IMP	RAW	IMP	RAW	IMP
1	3				23			
2	24	20			12	24		2
3	73	41	2		51	10		3
4	159		18	44	112	6	5	
5	100		22	168	80		7	
6	35		16	8	33			

(B)

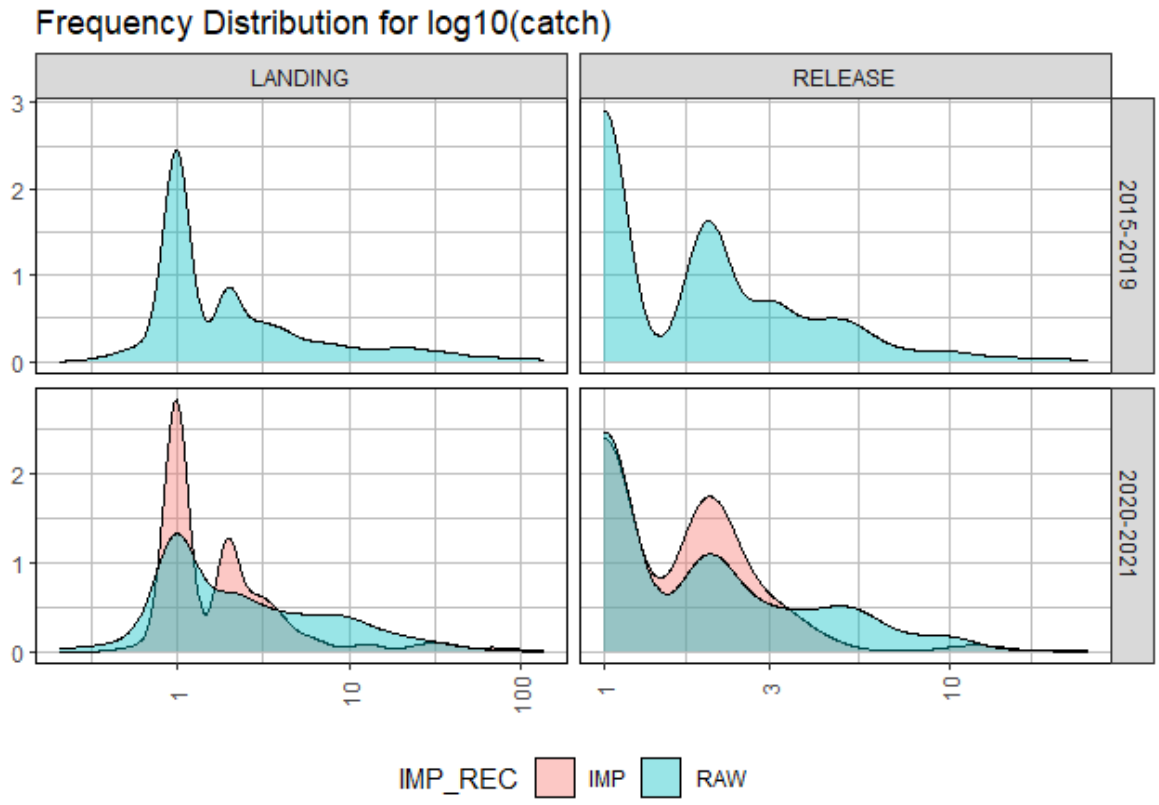

Figure 9. *COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic gray triggerfish. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020-2021 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2020-2021), in raw 2020-2021 APAIS data, and in 2020-2021 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 all Gulf of Mexico states and 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 82 gray triggerfish, this includes any weights heavier than 14.2065 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 proportion of wave1 catch to that from other waves (2-6) in years 1982-1984 (by fishing mode and area) was multiplied by the total catch from waves 2-6 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 (3 = Florida Keys, Monroe; 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 Gulf of Mexico and 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 1986 in the Gulf and 1981 in the South Atlantic, the MRIP combined for-hire mode must be split in these early years (1981-1985) to provide headboat landings estimates in the Gulf and to avoid double counting of headboat landings in the South Atlantic. 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).