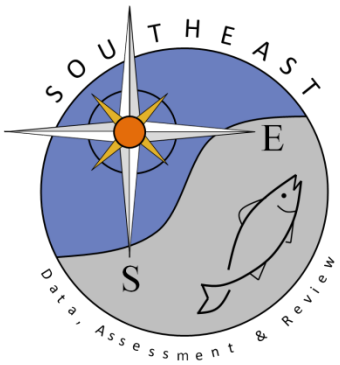
General Recreational Survey Data for Atlantic Cobia

Samantha M. Binion-Rock

SEDAR95-DW-02

13 June 2024



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SEDAR 95-WP-02
General Recreational Survey Data for Atlantic Cobia

NOAA Fisheries
Southeast Fisheries Science Center
Sustainable Fisheries Division
Data Analysis and Assessment Support Branch

Samantha M. Binion-Rock

June 13, 2024

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

Parameters for data prepared for SEDAR 95 recreational catch data:

- Species: Cobia
- Year Range: 1981 - 2023
- Geographic Range: Atlantic states from Georgia to Maine.
- Fishing Modes: Charter, Private, Shore, Headboat (Virginia to Maine), and Charter/Headboat Virginia to Maine)
- Weight Units: whole weight
- MRIP Calibration: 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). These calibrations allow for estimates in the entire time series to be compared to one another.
- 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 95 Cobia, this includes any weights heavier than 157.08 pounds.

Catch and Sample Size Information for Particular Domains:

Annual catch estimates that appear relatively large/small compared to the adjacent years were further investigated by identifying and summarizing strata that disproportionately contributing to the estimate. Investigations are more likely to be directed at high catch estimates given the zero-boundary constraint that makes it difficult to identify low catches.

- 1996 landings estimate: 94,001 fish
  - There were 36 MRIP dockside interviews that intercepted landed Cobia. Intercepts from the following strata are the primary contributors of the 1996 landings estimate.
    - Strata: South Carolina, Private, Wave 6, Ocean > 3 mi
      - Intercept Records: a total of 1 angler trip resulted in a landings estimate of 46,697 fish
      - One angler trip harvested 3 Cobia (*NOT* seen by interviewer)
    - Strata: Virginia, Private, Wave 4, Inland
      - Intercept Records: a total of 3 angler trips resulted in a landings estimate of 31,918 fish
      - Two angler trips each harvested 2 Cobia (*NOT* seen by interviewer)
      - One angler trip harvested 1 Cobia (*NOT* seen by interviewer)

- 2015 landings estimate: 110,291 fish
  - There were 102 MRIP dockside interviews that intercepted landed Cobia. No single intercept contributed more than 6.2% to the annual estimate.

- 2018 landings estimate: 113,938 fish
  - There were 114 MRIP dockside interviews that intercepted landed Cobia. Intercepts from the following strata are the primary contributors of the 2018 landings estimate.
    - Strata: Virginia, Shore, Wave 3, Inland
      - Intercept Records: a total of 1 angler trips resulted in a landings estimate of 19,727 fish
      - One angler trip harvested 1 Cobia (*NOT* seen by interviewer)
    - Strata: Virginia, Private, Wave 4, Inland
      - Intercept Records: a total of 21 angler trips resulted in a landings estimate of 42,316 fish
      - There were 21 MRIP dockside interviews in this specific domain intercepted Cobia. For 20 of the interviews, between 1-3 Cobia were harvested (and seen by the interviewer) and the resulting expanded catch estimate for each intercept ranges from 181-7,544 Cobia.

  - There was 1 intercept at a high-pressure site where the trip harvested 2 Cobia (not seen by the interviewer). The expanded catch estimate for this trip is 22,631 Cobia.

- Beginning in 2017, discard estimates show a large and sustained increase when compared to years earlier in the time series. Framework Amendment 4 went into effect on September 5, 2017 and resulted in an increase in the recreational minimum size limit to 36" FL and reduced the recreational bag limit to 1 fish per day per person (or 6 fish maximum per vessel). The increase in discards beginning in 2017 corresponds to changes in management regulations. Discard estimates from 2017-2023 are based on a large (100+) number of intercept angler trips per year.
  - Summary of total number of intercepts that recorded Cobia discards from 2017-2023, by state.

State	2017	2018	2019	2020	2021	2022	2023
MA							1
RI							1
NY				1		1	
NJ		2	1				1
DE			1	4	1		
MD		10	1	9	12		
VA	42	107	165	199	104	42	36
NC	84	140	63	144	44	58	31
SC	12	24	24	25	23	26	26
GA	7	12	5	23	22	8	14
Total	145	295	260	405	206	135	110

Select annual Shore mode landings and discard estimates were also further investigated because these years had an increase in Shore mode relative to other years.

- 1985 Shore discard estimate: 50,412 fish
  - There were 4 MRIP dockside interviews that intercepted discarded Cobia. Intercepts from the following strata are the primary contributors of the 1985 discards estimate.
    - Strata: New Jersey, Shore, Wave 5, Inland
      - Intercept Records: a total of 2 angler trips resulted in a discard estimate of 36,839 fish
      - One angler trip released 3 Cobia
      - One angler trip released 2 Cobia
- 2005 Shore landings estimate: 24,007 fish

  - There were 4 MRIP dockside interviews that intercepted landed Cobia. Intercepts from the following strata are the primary contributors of the 1998 landings estimate.
    - Strata: Virginia, Private, Wave 3, Inland
      - Intercept Records: a total of 1 angler trip resulted in a landings estimate of 20,683 fish
      - One angler trip harvested 1 Cobia (seen by interviewer)
- 2023 Shore discard estimate: 83,820 fish
  - There were 16 MRIP dockside interviews that intercepted discarded Cobia. Intercepts from the following strata are the primary contributors to the 2023 discard estimate.
    - Strata: North Carolina, Shore, Wave 5, Inland
      - Intercept Records: a total of 4 angler trips resulted in a discard estimate of 40,492 fish
      - One angler trip discarded 5 Cobia
      - One angler trip discarded 2 Cobia
      - Two angler trips each discarded 1 Cobia
    - Strata: North Carolina, Shore, Wave 5, Inland
      - Intercept Records: a total of 1 angler trip resulted in a discard estimate of 11,363 fish
      - One angler trip discarded 1 Cobia
    - Strata: Virginia, Shore, Wave 5, Inland
      - Intercept Records: a total of 1 angler trip resulted in a discard estimate of 7,279 fish
      - One angler trip discarded 1 Cobia

Appendices

Appendix A. Additional Details of Survey Data and SEFSC Estimation

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Table 1. Annual landings (AB1) and discards (B2) of Cobia in numbers of fish by mode and year (MRIP). MRIP Headboat (2004+) 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	0	0	0	0			2,631	7,507	0	0	2,631	7,507
1982	0	0	0	0			11,196	0	0	0	11,196	0
1983	0	0	6	0			1,611	0	0	9,464	1,616	9,464
1984	306	0	0	0			17,136	0	0	6,108	17,441	6,108
1985	1,371	0	1,470	95			12,706	8,096	0	50,412	15,547	58,603
1986	1,850	0	284	0			21,323	9,112	9,587	0	33,044	9,112
1987	1,270	0	0	0			5,898	736	17,585	0	24,753	736
1988	2,289	229	0	0			8,562	6,044	908	0	11,759	6,273
1989	1,243	68	147	0			16,959	2,821	3,234	10,877	21,583	13,767
1990	1,594	0	0	0			16,261	9,102	0	1,855	17,854	10,958
1991	2,327	315	170	426			11,352	22,750	7,291	19,839	21,141	43,331
1992	2,091	55	0	0			16,488	7,419	4,283	7,260	22,862	14,733
1993	7,065	48	0	0			6,668	2,771	1,804	1,674	15,536	4,493
1994	542	21	0	778			8,143	12,145	3,273	19,234	11,958	32,179
1995	3,064	336	0	0			20,406	6,612	3,912	1,758	27,382	8,706
1996	3,597	153	0	0			89,852	5,336	552	536	94,001	6,025
1997	574	0	0	0			13,382	9,549	4,674	26,513	18,631	36,062
1998	1,240	933	0	0			9,494	16,683	255	10,570	10,990	28,186
1999	817	0	0	0			21,346	44,619	1,469	25,179	23,633	69,798
2000	498	1,638	0	0			12,961	11,844	0	12,471	13,458	25,953
2001	1,297	0	0	0			9,699	27,242	424	8,222	11,421	35,464
2002	1,853	66	3	20			5,295	26,193	9,440	9,344	16,592	35,623
2003	3,520	1,242	1	0			47,537	46,996	793	16,409	51,852	64,647

	Cbt		CbtHbt		Hbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2004	3,306	5,766			0	38	28,123	26,219	0	4,057	31,428	36,079
2005	1,957	1,394			0	0	31,221	36,954	24,007	12,221	57,186	50,569
2006	823	458			0	0	49,949	53,641	0	0	50,772	54,099
2007	2,833	121			0	0	32,921	41,542	0	8,652	35,754	50,315
2008	885	670			0	0	24,544	22,149	3,195	15,672	28,624	38,491
2009	820	961			0	0	45,222	51,407	6,462	35,669	52,504	88,037
2010	3,167	1,683			0	0	44,851	46,583	2,453	31,595	50,471	79,861
2011	557	595			0	0	24,641	77,698	6,166	30,021	31,364	108,314
2012	564	270			0	179	27,400	30,003	18,287	58,264	46,250	88,717
2013	3,010	1,169			0	0	62,971	66,796	0	12,180	65,981	80,144
2014	2,109	2,052			0	0	45,441	74,435	4,688	56,600	52,237	133,088
2015	2,473	539			0	0	100,668	73,195	7,150	24,276	110,291	98,011
2016	3,694	3,223			0	0	57,191	91,125	14,810	50,617	75,695	144,966
2017	1,209	3,742			0	0	38,448	160,983	0	53,899	39,657	218,623
2018	4,641	7,596			132	353	83,239	276,531	25,926	82,649	113,938	367,130
2019	2,235	9,649			0	84	54,045	211,059	12,032	81,462	68,312	302,253
2020	2,046	5,336			75	226	62,485	196,092	12,180	46,668	76,786	248,322
2021	11,918	63,683			0	40	78,889	178,438	0	58,307	90,806	300,468
2022	4,550	12,899			0	34	59,163	137,909	6,086	38,767	69,800	189,610
2023	1,412	5,161			0	40	91,109	159,869	5,790	83,820	98,311	248,890

Table 2. Cobia 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 and, in parentheses, the number of PSUs and TRPs that intercepted Cobia. MRIP Headboat estimates are included from Virginia to Maine.

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP
1981	2,631	0.74	760 (2)	6,245 (2)	0	0.00	395 (0)	3,760 (0)	0	0.00	934 (0)	5,456 (0)	0	0.00	34 (0)	304 (0)				
1982	11,196	0.61	928 (6)	7,773 (6)	0	0.00	210 (0)	2,203 (0)	0	0.00	1,114 (0)	7,380 (0)	0	0.00	22 (0)	195 (0)				
1983	1,611	1.00	966 (1)	8,968 (1)	6	1.00	368 (1)	4,395 (1)	0	0.00	1,329 (0)	8,955 (0)	0	0.00	59 (0)	593 (0)				
1984	17,136	0.59	693 (3)	5,619 (7)	0	0.00	284 (0)	3,422 (0)	0	0.00	1,047 (0)	7,163 (0)	306	0.72	74 (2)	842 (2)				
1985	12,706	0.37	1,298 (15)	9,785 (19)	1,470	1.00	420 (1)	4,713 (3)	0	0.00	1,774 (0)	10,568 (0)	1,371	0.91	89 (3)	778 (3)				
1986	21,323	0.41	2,024 (16)	14,903 (20)	284	0.64	638 (3)	6,191 (4)	9,587	1.00	989 (1)	5,243 (1)	1,850	0.72	171 (2)	1,364 (5)				
1987	5,898	0.29	1,856 (16)	15,193 (16)	0	0.00	427 (0)	3,699 (0)	17,585	0.90	1,152 (3)	6,791 (3)	1,270	0.38	324 (11)	3,135 (16)				
1988	8,562	0.36	2,150 (16)	17,333 (17)	0	0.00	580 (0)	5,424 (0)	908	1.00	1,576 (1)	9,893 (1)	2,289	0.68	300 (7)	2,731 (7)				
1989	16,959	0.32	2,846 (27)	23,120 (37)	147	0.77	907 (2)	9,015 (2)	3,234	0.58	2,111 (3)	14,194 (3)	1,243	0.90	303 (3)	3,392 (3)				
1990	16,261	0.29	3,188 (24)	28,306 (37)	0	0.00	798 (0)	6,705 (0)	0	0.00	1,711 (0)	11,919 (0)	1,594	0.65	232 (5)	2,689 (5)				
1991	11,352	0.32	3,159 (19)	28,436 (20)	170	0.99	852 (2)	7,264 (2)	7,291	0.45	2,211 (7)	18,044 (8)	2,327	0.94	276 (4)	3,168 (4)				
1992	16,488	0.31	3,374 (20)	29,251 (22)	0	0.00	805 (0)	6,758 (0)	4,283	0.72	1,970 (3)	15,681 (3)	2,091	0.50	343 (11)	3,544 (12)				
1993	6,668	0.42	3,109 (9)	25,764 (9)	0	0.00	695 (0)	5,816 (0)	1,804	1.00	2,291 (1)	17,115 (1)	7,065	0.68	249 (7)	3,203 (7)				
1994	8,143	0.28	3,330 (21)	27,708 (21)	0	0.00	708 (0)	5,635 (0)	3,273	0.73	2,586 (2)	19,777 (2)	542	0.56	345 (4)	5,161 (4)				
1995	20,406	0.52	3,014 (16)	24,904 (17)	0	0.00	653 (0)	5,262 (0)	3,912	0.58	2,540 (3)	20,522 (4)	3,064	0.50	314 (11)	4,524 (11)				
1996	89,852	0.63	2,929 (17)	25,287 (21)	0	0.00	693 (0)	5,343 (0)	552	1.00	2,257 (1)	20,640 (1)	3,597	0.78	480 (12)	7,065 (14)				

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP
1997	13,382	0.54	3,202 (14)	28,026 (15)	0	0.00	821 (0)	6,318 (0)	4,674	1.00	2,563 (1)	20,338 (1)	574	0.46	531 (8)	7,059 (8)				
1998	9,494	0.45	3,087 (13)	26,649 (13)	0	0.00	950 (0)	6,797 (0)	255	1.00	2,515 (1)	20,493 (1)	1,240	0.45	527 (8)	6,586 (12)				
1999	21,346	0.62	2,699 (9)	24,098 (14)	0	0.00	764 (0)	6,162 (0)	1,469	1.00	2,642 (1)	20,591 (1)	817	0.46	423 (6)	4,459 (7)				
2000	12,961	0.48	2,878 (7)	23,666 (10)	0	0.00	799 (0)	5,739 (0)	0	0.00	2,464 (0)	18,869 (0)	498	0.54	423 (5)	5,446 (5)				
2001	9,699	0.47	3,508 (12)	32,409 (15)	0	0.00	932 (0)	7,950 (0)	424	1.00	2,790 (1)	22,462 (1)	1,297	0.50	341 (7)	4,915 (9)				
2002	5,295	0.49	3,174 (9)	27,165 (9)	3	1.00	864 (1)	6,873 (1)	9,440	0.59	2,893 (4)	21,129 (5)	1,853	0.65	385 (9)	4,331 (9)				
2003	47,537	0.59	3,552 (13)	26,699 (19)	1	1.00	1,452 (1)	12,629 (1)	793	1.00	3,176 (1)	20,740 (1)	3,520	0.45	344 (9)	3,831 (13)				
2004	28,123	0.35	2,585 (13)	21,445 (14)	0	0.00	0 (0)	0 (0)	0	0.00	1,923 (0)	15,088 (0)	3,306	0.53	942 (12)	7,400 (12)	0	0.00	875 (0)	9,327 (0)
2005	31,221	0.49	2,254 (10)	18,373 (14)					24,007	0.87	1,753 (3)	12,843 (4)	1,957	0.56	1,310 (8)	9,639 (8)	0	0.00	982 (0)	10,946 (0)
2006	49,949	0.43	2,479 (15)	20,639 (15)					0	0.00	1,621 (0)	11,788 (0)	823	0.50	1,206 (7)	8,421 (7)	0	0.00	890 (0)	8,639 (0)
2007	32,921	0.44	2,777 (17)	22,480 (23)					0	0.00	1,817 (0)	14,051 (0)	2,833	0.59	1,210 (8)	8,662 (9)	0	0.00	642 (0)	8,160 (0)
2008	24,544	0.46	2,695 (9)	22,049 (11)					3,195	0.71	1,872 (2)	15,011 (2)	885	0.68	1,247 (5)	8,825 (8)	0	0.00	677 (0)	8,757 (0)
2009	45,222	0.26	2,719 (26)	20,781 (26)					6,462	0.73	1,759 (2)	12,001 (2)	820	0.48	1,175 (8)	7,732 (9)	0	0.00	656 (0)	7,407 (0)
2010	44,851	0.23	3,063 (37)	23,931 (48)					2,453	1.00	2,265 (1)	16,500 (1)	3,167	0.37	1,336 (23)	9,304 (27)	0	0.00	676 (0)	8,361 (0)
2011	24,641	0.40	2,805 (13)	21,343 (15)					6,166	0.64	2,324 (4)	15,951 (4)	557	0.58	1,166 (7)	8,036 (14)	0	0.00	626 (0)	7,595 (0)
2012	27,400	0.52	2,851 (14)	23,175 (17)					18,287	1.00	2,518 (1)	17,573 (1)	564	0.44	1,048 (9)	7,813 (12)	0	0.00	477 (0)	5,786 (0)
2013	62,971	0.30	2,933 (37)	22,490 (59)					0	0.00	1,923 (0)	15,847 (0)	3,010	0.77	470 (8)	2,576 (9)	0	0.00	609 (0)	7,729 (0)
2014	45,441	0.29	3,181 (24)	23,087 (40)					4,688	0.71	1,689 (2)	14,546 (2)	2,109	0.45	893 (13)	5,832 (18)	0	0.00	546 (0)	7,301 (0)
2015	100,668	0.27	3,347 (38)	24,662 (68)					7,150	0.41	1,737 (7)	14,678 (7)	2,473	0.35	882 (21)	6,020 (27)	0	0.00	532 (0)	7,295 (0)

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP	AB1	CV	PSU	TRP
2016	57,191	0.47	3,318 (30)	23,924 (44)					14,810	0.77	2,267 (4)	14,503 (4)	3,694	0.35	1,061 (28)	7,646 (38)	0	0.00	572 (0)	8,689 (0)
2017	38,448	0.37	3,598 (21)	28,594 (30)					0	0.00	2,494 (0)	15,771 (0)	1,209	0.43	1,082 (10)	8,301 (13)	0	0.00	507 (0)	7,344 (0)
2018	83,239	0.41	3,567 (47)	29,574 (86)					25,926	0.78	2,526 (4)	17,925 (4)	4,641	0.41	1,308 (34)	10,850 (49)	132	1.00	512 (1)	8,137 (2)
2019	54,045	0.24	3,648 (47)	30,659 (70)					12,032	0.73	2,562 (4)	17,837 (4)	2,235	0.30	1,351 (28)	10,140 (36)	0	0.00	503 (0)	8,599 (0)
2020	62,485	0.18	4,590 (70)	39,764 (127)					12,180	0.86	3,199 (3)	21,664 (3)	2,046	0.34	1,624 (41)	12,927 (59)	75	1.00	960 (1)	16,259 (2)
2021	78,889	0.18	4,316 (53)	35,019 (76)					0	0.00	3,037 (0)	19,147 (0)	11,918	0.53	1,642 (26)	12,661 (34)	0	0.00	631 (0)	10,791 (0)
2022	59,163	0.28	4,002 (33)	28,758 (39)					6,086	1.00	2,652 (1)	15,066 (1)	4,550	0.38	1,441 (21)	10,203 (27)	0	0.00	553 (0)	9,290 (0)
2023	91,109	0.33	4,154 (26)	30,387 (32)					5,790	0.79	2,847 (2)	17,040 (2)	1,412	0.52	1,441 (12)	9,811 (12)	0	0.00	454 (0)	7,235 (0)

Table 3. Cobia 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 and, in parentheses, the number of PSUs and TRPs that intercepted Cobia. MRIP Headboat (2004+) estimates are included from Virginia to Maine.

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP
1981	7,507	1.00	760 (1)	6,245 (1)	0	0.00	395 (0)	3,760 (0)	0	0.00	934 (0)	5,456 (0)	0	0.00	34 (0)	304 (0)				
1982	0	0.00	928 (0)	7,773 (0)	0	0.00	210 (0)	2,203 (0)	0	0.00	1,114 (0)	7,380 (0)	0	0.00	22 (0)	195 (0)				
1983	0	0.00	966 (0)	8,968 (0)	0	0.00	368 (0)	4,395 (0)	9,464	1.00	1,329 (1)	8,955 (1)	0	0.00	59 (0)	593 (0)				
1984	0	0.00	693 (0)	5,619 (0)	0	0.00	284 (0)	3,422 (0)	6,108	1.00	1,047 (1)	7,163 (1)	0	0.00	74 (0)	842 (0)				
1985	8,096	0.52	1,298 (6)	9,785 (7)	95	1.00	420 (1)	4,713 (1)	50,412	0.76	1,774 (3)	10,568 (4)	0	0.00	89 (0)	778 (0)				
1986	9,112	1.00	2,024 (1)	14,903 (2)	0	0.00	638 (0)	6,191 (0)	0	0.00	989 (0)	5,243 (0)	0	0.00	171 (0)	1,364 (0)				
1987	736	0.60	1,856 (3)	15,193 (3)	0	0.00	427 (0)	3,699 (0)	0	0.00	1,152 (0)	6,791 (0)	0	0.00	324 (0)	3,135 (0)				
1988	6,044	0.43	2,150 (7)	17,333 (10)	0	0.00	580 (0)	5,424 (0)	0	0.00	1,576 (0)	9,893 (0)	229	1.00	300 (1)	2,731 (4)				
1989	2,821	0.56	2,846 (4)	23,120 (4)	0	0.00	907 (0)	9,015 (0)	10,877	0.89	2,111 (2)	14,194 (2)	68	1.00	303 (1)	3,392 (1)				
1990	9,102	0.46	3,188 (9)	28,306 (9)	0	0.00	798 (0)	6,705 (0)	1,855	1.00	1,711 (1)	11,919 (1)	0	0.00	232 (0)	2,689 (0)				
1991	22,750	0.50	3,159 (15)	28,436 (18)	426	0.82	852 (2)	7,264 (2)	19,839	0.59	2,211 (8)	18,044 (11)	315	0.89	276 (2)	3,168 (2)				
1992	7,419	0.65	3,374 (8)	29,251 (10)	0	0.00	805 (0)	6,758 (0)	7,260	0.64	1,970 (3)	15,681 (3)	55	1.00	343 (1)	3,544 (1)				
1993	2,771	0.73	3,109 (2)	25,764 (3)	0	0.00	695 (0)	5,816 (0)	1,674	1.00	2,291 (1)	17,115 (1)	48	1.00	249 (1)	3,203 (1)				
1994	12,145	0.48	3,330 (13)	27,708 (14)	778	1.00	708 (1)	5,635 (5)	19,234	0.82	2,586 (6)	19,777 (7)	21	1.00	345 (1)	5,161 (1)				
1995	6,612	0.45	3,014 (10)	24,904 (11)	0	0.00	653 (0)	5,262 (0)	1,758	0.61	2,540 (3)	20,522 (3)	336	0.68	314 (3)	4,524 (3)				
1996	5,336	0.46	2,929 (9)	25,287 (11)	0	0.00	693 (0)	5,343 (0)	536	1.00	2,257 (1)	20,640 (1)	153	0.73	480 (2)	7,065 (4)				

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP
1997	9,549	0.42	3,202 (14)	28,026 (15)	0	0.00	821 (0)	6,318 (0)	26,513	0.40	2,563 (8)	20,338 (9)	0	0.00	531 (0)	7,059 (0)				
1998	16,683	0.41	3,087 (14)	26,649 (15)	0	0.00	950 (0)	6,797 (0)	10,570	0.59	2,515 (5)	20,493 (6)	933	0.71	527 (3)	6,586 (7)				
1999	44,619	0.44	2,699 (12)	24,098 (19)	0	0.00	764 (0)	6,162 (0)	25,179	0.55	2,642 (6)	20,591 (8)	0	0.00	423 (0)	4,459 (0)				
2000	11,844	0.49	2,878 (10)	23,666 (12)	0	0.00	799 (0)	5,739 (0)	12,471	0.74	2,464 (3)	18,869 (3)	1,638	0.75	423 (3)	5,446 (4)				
2001	27,242	0.32	3,508 (21)	32,409 (23)	0	0.00	932 (0)	7,950 (0)	8,222	0.59	2,790 (3)	22,462 (4)	0	0.00	341 (0)	4,915 (0)				
2002	26,193	0.33	3,174 (16)	27,165 (17)	20	1.00	864 (1)	6,873 (5)	9,344	0.52	2,893 (4)	21,129 (4)	66	1.00	385 (1)	4,331 (1)				
2003	46,996	0.27	3,552 (22)	26,699 (25)	0	0.00	1,452 (0)	12,629 (0)	16,409	0.36	3,176 (9)	20,740 (10)	1,242	0.74	344 (3)	3,831 (3)				
2004	26,219	0.33	2,585 (17)	21,445 (18)	0	0.00	0 (0)	0 (0)	4,057	0.86	1,923 (3)	15,088 (3)	5,766	0.99	942 (2)	7,400 (2)	38	1.00	875 (1)	9,327 (1)
2005	36,954	0.33	2,254 (17)	18,373 (22)					12,221	0.65	1,753 (3)	12,843 (3)	1,394	0.77	1,310 (4)	9,639 (5)	0	0.00	982 (0)	10,946 (0)
2006	53,641	0.35	2,479 (20)	20,639 (26)					0	0.00	1,621 (0)	11,788 (0)	458	0.69	1,206 (3)	8,421 (4)	0	0.00	890 (0)	8,639 (0)
2007	41,542	0.53	2,777 (18)	22,480 (26)					8,652	0.70	1,817 (3)	14,051 (3)	121	0.87	1,210 (2)	8,662 (2)	0	0.00	642 (0)	8,160 (0)
2008	22,149	0.41	2,695 (17)	22,049 (21)					15,672	0.55	1,872 (6)	15,011 (6)	670	0.45	1,247 (7)	8,825 (10)	0	0.00	677 (0)	8,757 (0)
2009	51,407	0.44	2,719 (18)	20,781 (23)					35,669	0.40	1,759 (13)	12,001 (14)	961	0.81	1,175 (3)	7,732 (4)	0	0.00	656 (0)	7,407 (0)
2010	46,583	0.24	3,063 (34)	23,931 (46)					31,595	0.42	2,265 (12)	16,500 (12)	1,683	0.59	1,336 (6)	9,304 (14)	0	0.00	676 (0)	8,361 (0)
2011	77,698	0.42	2,805 (26)	21,343 (33)					30,021	0.34	2,324 (16)	15,951 (21)	595	0.48	1,166 (6)	8,036 (10)	0	0.00	626 (0)	7,595 (0)
2012	30,003	0.26	2,851 (28)	23,175 (32)					58,264	0.35	2,518 (24)	17,573 (31)	270	0.47	1,048 (5)	7,813 (7)	179	1.00	477 (2)	5,786 (2)
2013	66,796	0.35	2,933 (33)	22,490 (57)					12,180	0.48	1,923 (6)	15,847 (8)	1,169	0.66	470 (4)	2,576 (6)	0	0.00	609 (0)	7,729 (0)
2014	74,435	0.33	3,181 (29)	23,087 (43)					56,600	0.59	1,689 (9)	14,546 (10)	2,052	0.63	893 (4)	5,832 (14)	0	1.00	546 (1)	7,301 (1)
2015	73,195	0.40	3,347 (31)	24,662 (58)					24,276	0.55	1,737 (7)	14,678 (7)	539	0.51	882 (5)	6,020 (7)	0	0.00	532 (0)	7,295 (0)

	Priv				CbtHbt				Shore				Cbt				Hbt			
Year	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP	B2	CV	PSU	TRP
2016	91,125	0.22	3,318 (49)	23,924 (77)					50,617	0.38	2,267 (11)	14,503 (13)	3,223	0.58	1,061 (14)	7,646 (20)	0	0.00	572 (0)	8,689 (0)
2017	160,983	0.35	3,598 (61)	28,594 (94)					53,899	0.39	2,494 (12)	15,771 (14)	3,742	0.56	1,082 (19)	8,301 (37)	0	0.00	507 (0)	7,344 (0)
2018	276,531	0.24	3,567 (87)	29,574 (187)					82,649	0.34	2,526 (17)	17,925 (24)	7,596	0.44	1,308 (39)	10,850 (77)	353	0.79	512 (3)	8,137 (7)
2019	211,059	0.18	3,648 (91)	30,659 (194)					81,462	0.51	2,562 (17)	17,837 (27)	9,649	0.52	1,351 (23)	10,140 (37)	84	0.94	503 (2)	8,599 (2)
2020	196,092	0.15	4,590 (116)	39,764 (275)					46,668	0.46	3,199 (18)	21,664 (29)	5,336	0.28	1,624 (44)	12,927 (92)	226	0.71	960 (5)	16,259 (9)
2021	178,438	0.29	4,316 (77)	35,019 (128)					58,307	0.41	3,037 (10)	19,147 (11)	63,683	0.75	1,642 (39)	12,661 (65)	40	0.89	631 (2)	10,791 (2)
2022	137,909	0.34	4,002 (49)	28,758 (75)					38,767	0.32	2,652 (13)	15,066 (14)	12,899	0.49	1,441 (27)	10,203 (43)	34	0.78	553 (3)	9,290 (3)
2023	159,869	0.30	4,154 (46)	30,387 (65)					83,820	0.46	2,847 (12)	17,040 (16)	5,161	0.61	1,441 (19)	9,811 (28)	40	1.00	454 (1)	7,235 (1)

Table 4. Cobia 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 and, in parentheses, the number of PSUs and TRPs that intercepted Cobia.

	AB1				B2			
Year	Total	CV	PSU	TRP	Total	CV	PSU	TRP
1981	2,631	0.74	2,123 (2)	15,765 (2)	7,507	1.00	2,123 (1)	15,765 (1)
1982	11,196	0.61	2,274 (6)	17,549 (6)	0	0.00	2,274 (0)	17,549 (0)
1983	1,616	1.00	2,722 (2)	22,911 (2)	9,464	1.00	2,722 (1)	22,911 (1)
1984	17,441	0.58	2,098 (5)	17,046 (9)	6,108	1.00	2,098 (1)	17,046 (1)
1985	15,547	0.33	3,581 (19)	25,844 (25)	58,603	0.65	3,581 (10)	25,844 (12)
1986	33,044	0.39	3,822 (22)	27,701 (30)	9,112	1.00	3,822 (1)	27,701 (2)
1987	24,753	0.64	3,759 (30)	28,818 (35)	736	0.60	3,759 (3)	28,818 (3)
1988	11,759	0.30	4,606 (24)	35,381 (25)	6,273	0.41	4,606 (8)	35,381 (14)
1989	21,583	0.27	6,167 (35)	49,721 (45)	13,767	0.71	6,167 (7)	49,721 (7)
1990	17,854	0.27	5,929 (29)	49,619 (42)	10,958	0.42	5,929 (10)	49,619 (10)
1991	21,141	0.25	6,498 (32)	56,912 (34)	43,331	0.38	6,498 (27)	56,912 (33)
1992	22,862	0.26	6,492 (34)	55,234 (37)	14,733	0.46	6,492 (12)	55,234 (14)
1993	15,536	0.36	6,344 (17)	51,898 (17)	4,493	0.58	6,344 (4)	51,898 (5)
1994	11,958	0.28	6,969 (27)	58,281 (27)	32,179	0.52	6,969 (21)	58,281 (27)
1995	27,382	0.40	6,521 (30)	55,212 (32)	8,706	0.36	6,521 (16)	55,212 (17)
1996	94,001	0.60	6,359 (30)	58,335 (36)	6,025	0.41	6,359 (12)	58,335 (16)
1997	18,631	0.46	7,117 (23)	61,741 (24)	36,062	0.32	7,117 (22)	61,741 (24)
1998	10,990	0.39	7,079 (22)	60,525 (26)	28,186	0.33	7,079 (22)	60,525 (28)
1999	23,633	0.55	6,528 (16)	55,310 (22)	69,798	0.34	6,528 (18)	55,310 (27)
2000	13,458	0.46	6,564 (12)	53,720 (15)	25,953	0.42	6,564 (16)	53,720 (19)
2001	11,421	0.40	7,571 (20)	67,736 (25)	35,464	0.28	7,571 (24)	67,736 (27)
2002	16,592	0.38	7,316 (23)	59,498 (24)	35,623	0.28	7,316 (22)	59,498 (27)
2003	51,852	0.53	8,524 (24)	63,899 (34)	64,647	0.21	8,524 (34)	63,899 (38)
2004	31,428	0.31	6,325 (25)	53,227 (26)	36,079	0.30	6,325 (23)	53,227 (24)
2005	57,186	0.45	6,299 (21)	51,766 (26)	50,569	0.28	6,299 (24)	51,766 (30)
2006	50,772	0.41	6,196 (22)	49,381 (22)	54,099	0.35	6,196 (23)	49,381 (30)
2007	35,754	0.41	6,446 (25)	53,228 (32)	50,315	0.45	6,446 (23)	53,228 (31)
2008	28,624	0.41	6,491 (16)	54,497 (21)	38,491	0.33	6,491 (30)	54,497 (37)
2009	52,504	0.23	6,309 (36)	47,784 (37)	88,037	0.30	6,309 (34)	47,784 (41)
2010	50,471	0.21	7,340 (61)	57,973 (76)	79,861	0.22	7,340 (52)	57,973 (72)
2011	31,364	0.34	6,921 (24)	52,843 (33)	108,314	0.32	6,921 (48)	52,843 (64)

	AB1				B2			
Year	**Total**	**CV**	**PSU**	**TRP**	**Total**	**CV**	**PSU**	**TRP**
2012	46,250	0.50	6,894 (24)	54,259 (30)	88,717	0.24	6,894 (59)	54,259 (72)
2013	65,981	0.27	5,935 (45)	48,642 (68)	80,144	0.30	5,935 (43)	48,642 (71)
2014	52,237	0.26	6,309 (39)	50,766 (60)	133,088	0.31	6,309 (43)	50,766 (68)
2015	110,291	0.24	6,498 (66)	52,655 (102)	98,011	0.32	6,498 (43)	52,655 (72)
2016	75,695	0.38	7,218 (62)	54,679 (86)	144,966	0.18	7,218 (74)	54,679 (110)
2017	39,657	0.36	7,681 (31)	59,947 (43)	218,623	0.27	7,681 (92)	59,947 (145)
2018	113,938	0.34	7,913 (86)	66,412 (141)	367,130	0.20	7,913 (146)	66,412 (295)
2019	68,312	0.23	8,064 (79)	67,173 (110)	302,253	0.18	8,064 (133)	67,173 (260)
2020	76,786	0.20	10,373 (115)	90,564 (191)	248,322	0.15	10,373 (183)	90,564 (405)
2021	90,806	0.17	9,626 (79)	77,562 (110)	300,468	0.25	9,626 (128)	77,562 (206)
2022	69,800	0.25	8,648 (55)	63,258 (67)	189,610	0.26	8,648 (92)	63,258 (135)
2023	98,311	0.31	8,896 (40)	64,419 (46)	248,890	0.24	8,896 (78)	64,419 (110)

Table 5. Cobia 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.

	Shore		Hbt		Cbt		Priv		CbtHbt		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV
1981	0	0.00			0	0.00	71,444	0.81	0	0.00	71,444	0.81
1982	0	0.00			0	0.00	178,375	0.73	0	0.00	178,375	0.73
1983	0	0.00			0	0.00	41,852	1.00	170	1.00	42,022	1.00
1984	0	0.00			7,653	0.74	429,161	0.60	0	0.00	436,814	0.60
1985	0	0.00			29,458	0.91	272,946	0.38	28,504	1.00	330,908	0.34
1986	176,362	1.00			34,041	0.72	501,695	0.43	8,309	0.70	720,407	0.40
1987	350,505	0.95			28,643	0.38	110,355	0.34	0	0.00	489,503	0.64
1988	22,899	1.00			57,752	0.70	216,045	0.42	0	0.00	296,696	0.34
1989	58,320	0.77			22,407	0.92	387,624	0.33	4,296	0.95	472,646	0.28
1990	0	0.00			30,089	0.68	378,887	0.30	0	0.00	408,976	0.28
1991	155,056	0.50			49,815	0.94	284,136	0.37	4,986	0.99	493,993	0.28
1992	121,432	0.73			57,470	0.51	452,082	0.32	0	0.00	630,984	0.27
1993	46,384	1.00			181,682	0.69	189,422	0.45	0	0.00	417,487	0.37
1994	87,428	0.75			14,466	0.58	219,349	0.30	0	0.00	321,243	0.29
1995	125,487	0.59			98,144	0.51	608,246	0.53	0	0.00	831,877	0.41
1996	10,386	1.00			57,736	0.79	2,151,371	0.64	0	0.00	2,219,493	0.61
1997	136,773	1.00			17,726	0.47	406,016	0.54	0	0.00	560,515	0.46
1998	9,977	1.00			52,614	0.45	300,171	0.48	0	0.00	362,762	0.39
1999	43,591	1.00			24,238	0.49	630,786	0.65	0	0.00	698,616	0.57
2000	0	0.00			13,984	0.57	376,690	0.50	0	0.00	390,674	0.47
2001	12,418	1.00			37,974	0.54	280,793	0.48	0	0.00	331,186	0.41
2002	295,408	0.62			53,372	0.66	162,815	0.50	101	1.00	511,695	0.39
2003	19,630	1.00			76,656	0.47	1,328,749	0.59	23	1.00	1,425,058	0.53
2004	0	0.00	0	0.00	115,168	0.54	940,949	0.36			1,056,117	0.32
2005	701,340	0.89	0	0.00	56,674	0.57	794,529	0.50			1,552,543	0.46
2006	0	0.00	0	0.00	24,833	0.51	1,444,586	0.45			1,469,419	0.42
2007	0	0.00	0	0.00	75,959	0.61	956,704	0.45			1,032,662	0.42
2008	90,609	0.80	0	0.00	24,475	0.69	690,125	0.47			805,209	0.42
2009	165,106	0.80	0	0.00	20,568	0.49	1,216,911	0.27			1,402,585	0.24
2010	81,505	1.00	0	0.00	102,275	0.37	1,512,779	0.24			1,696,559	0.21
2011	255,595	0.72	0	0.00	17,703	0.59	761,346	0.43			1,034,643	0.36
2012	535,132	1.00	0	0.00	19,813	0.46	879,830	0.52			1,434,775	0.51
2013	0	0.00	0	0.00	75,064	0.77	1,549,750	0.30			1,624,814	0.27

	Shore		Hbt		Cbt		Priv		CbtHbt		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV
2014	121,997	0.71	0	0.00	54,545	0.45	1,216,028	0.29			1,392,569	0.26
2015	262,934	0.43	0	0.00	76,172	0.35	3,646,214	0.28			3,985,321	0.25
2016	489,475	0.77	0	0.00	115,339	0.35	1,876,229	0.47			2,481,044	0.38
2017	0	0.00	0	0.00	39,683	0.44	1,370,226	0.37			1,409,908	0.36
2018	700,316	0.79	3,496	1.00	127,003	0.41	2,220,227	0.41			3,051,042	0.34
2019	346,514	0.73	0	0.00	59,587	0.30	1,601,905	0.24			2,008,005	0.23
2020	339,840	0.87	2,089	1.00	55,417	0.34	1,716,316	0.18			2,113,662	0.20
2021	0	0.00	0	0.00	322,223	0.53	2,202,401	0.18			2,524,623	0.17
2022	161,508	1.00	0	0.00	111,401	0.38	1,520,495	0.28			1,793,404	0.25
2023	143,904	0.79	0	0.00	35,651	0.52	2,375,594	0.33			2,555,149	0.31

Table 6. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Cobia 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. Summaries include observed and imputed 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	2 (2)	2.2	4.2	2.8	6.2	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	6 (6)	1.3	12.3	15.4	35.2	0 (0)	0.0	0.0	0.0	0.0
1983	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0	2 (1)	36.4	45.6	13.1	54.9	0 (0)	0.0	0.0	0.0	0.0
1984	2 (2)	9.9	13.2	4.7	16.5	0 (0)	0.0	0.0	0.0	0.0	8 (7)	17.6	32.8	14.0	62.5	0 (0)	0.0	0.0	0.0	0.0
1985	3 (3)	17.4	20.3	2.9	23.1	15 (3)	1.1	19.4	12.5	38.4	25 (19)	1.5	23.2	12.5	56.0	0 (0)	0.0	0.0	0.0	0.0
1986	7 (7)	22.0	30.8	12.3	50.8	2 (2)	0.9	15.0	19.9	29.1	23 (20)	1.6	20.1	13.8	50.9	1 (1)	41.0	41.0	0.0	41.0
1987	20 (16)	12.1	25.2	7.2	48.6	0 (0)	0.0	0.0	0.0	0.0	16 (16)	0.4	16.5	12.5	34.1	3 (3)	0.3	1.3	1.6	3.2
1988	6 (5)	9.9	23.5	13.8	43.0	0 (0)	0.0	0.0	0.0	0.0	9 (8)	1.2	26.1	18.5	50.5	1 (1)	49.0	49.0	0.0	49.0
1989	5 (5)	1.0	12.6	10.7	28.9	0 (0)	0.0	0.0	0.0	0.0	43 (37)	0.5	22.5	13.9	71.6	3 (3)	0.9	24.8	26.8	53.8
1990	8 (5)	3.2	22.8	17.2	56.5	0 (0)	0.0	0.0	0.0	0.0	47 (37)	0.2	19.4	11.9	65.5	0 (0)	0.0	0.0	0.0	0.0
1991	6 (5)	17.2	28.0	9.2	44.1	1 (1)	96.1	96.1	0.0	96.1	23 (20)	0.2	19.5	17.9	80.2	9 (8)	0.9	29.9	22.0	71.9
1992	13 (12)	10.6	21.4	8.5	38.1	0 (0)	0.0	0.0	0.0	0.0	30 (22)	5.1	29.4	11.8	56.7	3 (3)	28.2	40.2	12.2	52.6
1993	14 (7)	7.7	23.0	11.2	40.8	0 (0)	0.0	0.0	0.0	0.0	9 (9)	15.9	27.5	13.8	61.3	1 (1)	33.6	33.6	0.0	33.6
1994	5 (4)	22.2	34.7	13.2	52.6	0 (0)	0.0	0.0	0.0	0.0	26 (21)	1.7	35.3	17.9	67.0	2 (2)	18.3	24.5	8.8	30.7
1995	15 (11)	13.9	32.0	14.4	60.2	0 (0)	0.0	0.0	0.0	0.0	18 (17)	7.9	30.8	17.9	69.7	4 (4)	27.7	38.8	10.7	51.3
1996	32 (14)	2.0	17.2	17.2	66.8	0 (0)	0.0	0.0	0.0	0.0	28 (21)	0.1	28.0	18.4	62.6	1 (1)	32.0	32.0	0.0	32.0
1997	11 (8)	20.6	31.5	11.5	56.3	0 (0)	0.0	0.0	0.0	0.0	19 (15)	20.0	34.3	11.0	57.2	1 (1)	36.7	36.7	0.0	36.7
1998	35 (12)	13.1	39.8	14.2	69.1	0 (0)	0.0	0.0	0.0	0.0	14 (13)	10.8	35.6	23.1	80.1	1 (1)	52.0	52.0	0.0	52.0
1999	10 (7)	10.5	36.4	20.4	68.4	0 (0)	0.0	0.0	0.0	0.0	17 (14)	1.8	16.7	18.4	60.8	1 (1)	48.1	48.1	0.0	48.1
2000	8 (5)	13.9	32.6	19.9	62.4	0 (0)	0.0	0.0	0.0	0.0	12 (10)	6.9	36.6	20.8	71.6	0 (0)	0.0	0.0	0.0	0.0
2001	10 (9)	10.6	25.5	18.0	58.6	0 (0)	0.0	0.0	0.0	0.0	18 (15)	13.2	33.6	14.6	69.1	1 (1)	67.3	67.3	0.0	67.3

	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
2002	15 (10)	11.5	30.9	19.8	74.9	0 (0)	0.0	0.0	0.0	0.0	12 (9)	18.1	37.3	12.4	56.1	5 (5)	19.6	42.8	21.6	73.2
2003	21 (14)	10.8	24.1	16.2	71.2	0 (0)	0.0	0.0	0.0	0.0	20 (19)	18.2	29.1	11.7	65.4	1 (1)	39.6	39.6	0.0	39.6
2004	19 (12)	14.6	36.0	13.6	61.7	0 (0)	0.0	0.0	0.0	0.0	23 (14)	13.7	32.6	15.9	69.1	0 (0)	0.0	0.0	0.0	0.0
2005	16 (8)	13.8	41.6	15.4	77.2	0 (0)	0.0	0.0	0.0	0.0	26 (14)	2.9	26.9	13.7	57.0	4 (4)	0.7	20.0	15.8	39.1
2006	9 (7)	14.8	27.2	8.0	38.9	0 (0)	0.0	0.0	0.0	0.0	17 (15)	14.8	34.6	19.1	77.7	0 (0)	0.0	0.0	0.0	0.0
2007	11 (9)	14.8	28.7	16.6	58.7	0 (0)	0.0	0.0	0.0	0.0	28 (23)	15.4	34.2	14.9	65.0	0 (0)	0.0	0.0	0.0	0.0
2008	11 (8)	10.7	25.5	15.5	60.1	0 (0)	0.0	0.0	0.0	0.0	20 (11)	13.4	29.0	12.4	55.1	2 (2)	20.1	40.9	29.5	61.7
2009	10 (9)	15.2	27.9	9.5	44.2	0 (0)	0.0	0.0	0.0	0.0	27 (26)	4.6	25.3	10.8	55.1	2 (2)	11.2	21.6	14.7	32.0
2010	64 (27)	10.1	31.2	10.2	60.1	0 (0)	0.0	0.0	0.0	0.0	58 (48)	4.6	34.1	15.7	81.6	1 (1)	19.8	19.8	0.0	19.8
2011	25 (14)	9.3	29.7	18.8	80.0	0 (0)	0.0	0.0	0.0	0.0	20 (15)	11.9	51.9	42.2	131.6	4 (4)	1.3	22.4	18.9	44.1
2012	17 (12)	3.3	45.5	24.7	85.0	0 (0)	0.0	0.0	0.0	0.0	25 (17)	11.9	27.4	8.9	44.8	1 (1)	3.3	3.3	0.0	3.3
2013	20 (9)	14.3	26.1	9.3	46.3	0 (0)	0.0	0.0	0.0	0.0	92 (59)	0.7	23.5	10.3	52.0	0 (0)	0.0	0.0	0.0	0.0
2014	45 (18)	13.7	26.1	12.0	60.6	0 (0)	0.0	0.0	0.0	0.0	46 (40)	14.1	23.7	6.6	38.6	2 (2)	30.3	32.8	3.5	35.3
2015	51 (27)	11.0	28.9	12.0	71.0	0 (0)	0.0	0.0	0.0	0.0	101 (68)	7.3	39.2	27.7	135.0	7 (7)	19.4	36.4	13.5	60.4
2016	53 (38)	5.5	32.2	11.0	59.5	0 (0)	0.0	0.0	0.0	0.0	55 (44)	18.1	31.7	8.2	53.2	4 (4)	22.6	32.4	8.1	41.9
2017	25 (13)	14.8	33.4	17.3	82.1	0 (0)	0.0	0.0	0.0	0.0	37 (30)	18.7	34.7	10.4	54.7	0 (0)	0.0	0.0	0.0	0.0
2018	85 (37)	16.5	26.8	11.9	90.4	3 (2)	19.1	20.0	1.0	21.2	99 (51)	7.3	27.4	9.3	54.9	4 (3)	18.4	39.1	14.7	50.0
2019	46 (29)	14.6	25.2	8.3	58.2	0 (0)	0.0	0.0	0.0	0.0	85 (55)	15.9	30.1	7.5	49.6	4 (3)	17.4	20.5	3.2	24.3
2020	90 (38)	14.3	27.1	12.6	90.4	3 (0)	19.1	20.0	1.0	21.2	140 (84)	7.3	27.8	8.6	50.7	3 (2)	24.3	37.7	12.9	50.0
2021	45 (34)	11.7	26.2	8.5	45.2	0 (0)	0.0	0.0	0.0	0.0	86 (76)	12.1	28.4	9.9	61.7	0 (0)	0.0	0.0	0.0	0.0
2022	39 (27)	14.3	27.1	11.2	56.2	0 (0)	0.0	0.0	0.0	0.0	46 (39)	13.4	27.2	9.4	51.8	1 (1)	20.7	20.7	0.0	20.7
2023	16 (12)	12.1	20.0	5.9	35.8	0 (0)	0.0	0.0	0.0	0.0	38 (31)	15.2	25.0	9.0	48.3	2 (2)	15.7	17.7	3.0	19.8

Table 7. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Cobia 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.

Year	N	Min	Avg	SD	Max
1981	2 (2)	2.2	4.2	2.8	6.2
1982	6 (6)	1.3	12.3	15.4	35.2
1983	2 (1)	36.4	45.6	13.1	54.9
1984	10 (9)	9.9	28.9	15.0	62.5
1985	43 (25)	1.1	21.7	12.1	56.0
1986	33 (30)	0.9	22.7	14.3	50.9
1987	39 (35)	0.3	19.8	11.6	48.6
1988	16 (14)	1.2	26.5	16.8	50.5
1989	51 (45)	0.5	21.7	14.5	71.6
1990	55 (42)	0.2	19.9	12.7	65.5
1991	39 (34)	0.2	25.2	21.4	96.1
1992	46 (37)	5.1	27.9	11.8	56.7
1993	24 (17)	7.7	25.1	12.0	61.3
1994	33 (27)	1.7	34.5	16.8	67.0
1995	37 (32)	7.9	32.2	15.7	69.7
1996	61 (36)	0.1	22.4	18.3	66.8
1997	31 (24)	20.0	33.4	10.9	57.2
1998	50 (26)	10.8	38.9	17.0	80.1
1999	28 (22)	1.8	24.8	21.2	68.4
2000	20 (15)	6.9	35.0	20.0	71.6
2001	29 (25)	10.6	32.0	17.2	69.1
2002	32 (24)	11.5	35.2	17.7	74.9
2003	42 (34)	10.8	26.8	14.2	71.2
2004	42 (26)	13.7	34.1	14.8	69.1
2005	46 (26)	0.7	31.4	16.1	77.2
2006	26 (22)	14.8	32.1	16.4	77.7
2007	39 (32)	14.8	32.7	15.4	65.0
2008	33 (21)	10.7	28.6	14.4	61.7
2009	39 (37)	4.6	25.8	10.5	55.1
2010	123 (76)	4.6	32.5	13.1	81.6
2011	49 (33)	1.3	38.1	32.3	131.6
2012	43 (30)	3.3	34.0	19.5	85.0

Year	N	Min	Avg	SD	Max
2013	112 (68)	0.7	24.0	10.1	52.0
2014	93 (60)	13.7	25.0	9.7	60.6
2015	159 (102)	7.3	35.8	23.7	135.0
2016	112 (86)	5.5	32.0	9.6	59.5
2017	62 (43)	14.8	34.2	13.5	82.1
2018	191 (93)	7.3	27.3	10.7	90.4
2019	135 (87)	14.6	28.2	8.1	58.2
2020	236 (124)	7.3	27.5	10.4	90.4
2021	131 (110)	11.7	27.7	9.5	61.7
2022	86 (67)	13.4	27.1	10.2	56.2
2023	56 (45)	12.1	23.3	8.4	48.3

Table 8. Estimated average weights of landed Cobia 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 (whole, 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.

	Shore			Hbt			Cbt			Priv			CbtHbt			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
1981	0.00	0.00	0 (0)				0.00	0.00	0 (0)	27.16	0.47	2 (2)	0.00	0.00	0 (0)	27.16	0.47	2 (2)
1982	0.00	0.00	0 (0)				0.00	0.00	0 (0)	15.93	0.51	6 (6)	0.00	0.00	0 (0)	15.93	0.51	6 (6)
1983	0.00	0.00	0 (0)				0.00	0.00	0 (0)	25.98	0.20	1 (2)	29.26	0.00	0 (0)	26.00	0.20	1 (2)
1984	0.00	0.00	0 (0)				25.04	0.25	2 (2)	25.04	0.15	7 (8)	0.00	0.00	0 (0)	25.04	0.16	9 (10)
1985	0.00	0.00	0 (0)				21.49	0.08	3 (3)	21.48	0.11	19 (25)	19.40	0.17	3 (15)	21.29	0.08	25 (43)
1986	18.40	0.00	1 (1)				18.40	0.02	5 (5)	23.53	0.14	20 (23)	29.26	0.36	4 (4)	21.80	0.11	30 (33)
1987	19.93	0.72	3 (3)				22.56	0.06	16 (20)	18.71	0.19	16 (16)	0.00	0.00	0 (0)	19.78	0.09	35 (39)
1988	25.23	0.00	1 (1)				25.23	0.24	5 (6)	25.23	0.24	8 (9)	0.00	0.00	0 (0)	25.23	0.16	14 (16)
1989	18.03	0.63	3 (3)				18.03	0.45	3 (3)	22.86	0.09	37 (43)	29.26	0.88	2 (2)	21.90	0.09	45 (51)
1990	0.00	0.00	0 (0)				18.88	0.27	5 (8)	23.30	0.09	37 (47)	0.00	0.00	0 (0)	22.91	0.09	42 (55)
1991	21.27	0.25	8 (9)				21.40	0.12	4 (4)	25.03	0.19	20 (23)	29.26	0.38	2 (3)	23.37	0.14	34 (39)
1992	28.35	0.18	3 (3)				27.49	0.11	12 (13)	27.42	0.07	22 (30)	0.00	0.00	0 (0)	27.60	0.06	37 (46)
1993	25.72	0.00	1 (1)				25.72	0.13	7 (14)	28.41	0.17	9 (9)	0.00	0.00	0 (0)	26.87	0.10	17 (24)
1994	26.71	0.25	2 (2)				26.71	0.17	4 (5)	26.94	0.10	21 (26)	0.00	0.00	0 (0)	26.86	0.08	27 (33)
1995	32.08	0.14	4 (4)				32.03	0.12	11 (15)	29.81	0.14	17 (18)	0.00	0.00	0 (0)	30.38	0.08	32 (37)
1996	18.82	0.00	1 (1)				16.05	0.18	14 (32)	23.94	0.12	21 (28)	0.00	0.00	0 (0)	23.61	0.10	36 (61)
1997	29.26	0.00	1 (1)				30.86	0.11	8 (11)	30.34	0.07	15 (19)	0.00	0.00	0 (0)	30.09	0.06	24 (31)
1998	39.07	0.00	1 (1)				42.43	0.06	12 (35)	31.62	0.17	13 (14)	0.00	0.00	0 (0)	33.01	0.06	26 (50)
1999	29.67	0.00	1 (1)				29.67	0.18	7 (10)	29.55	0.27	14 (17)	0.00	0.00	0 (0)	29.56	0.16	22 (28)
2000	0.00	0.00	0 (0)				28.10	0.22	5 (8)	29.06	0.16	10 (12)	0.00	0.00	0 (0)	29.03	0.13	15 (20)

	Shore			Hbt			Cbt			Priv			CbtHbt			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
2001	29.28	0.00	1 (1)				29.28	0.22	9 (10)	28.95	0.10	15 (18)	0.00	0.00	0 (0)	29.00	0.10	25 (29)
2002	31.29	0.23	5 (5)				28.80	0.18	9 (14)	30.75	0.10	9 (12)	29.26	0.00	1 (1)	30.84	0.09	24 (32)
2003	24.74	0.00	1 (1)				21.78	0.15	13 (20)	27.95	0.09	19 (20)	29.26	0.00	1 (1)	27.48	0.08	34 (42)
2004	0.00	0.00	0 (0)	0.00	0.00	0 (0)	34.84	0.09	12 (19)	33.46	0.10	14 (23)				33.60	0.07	26 (42)
2005	29.21	0.40	4 (4)	0.00	0.00	0 (0)	28.96	0.09	8 (16)	25.45	0.10	14 (26)				27.15	0.08	26 (46)
2006	0.00	0.00	0 (0)	0.00	0.00	0 (0)	30.16	0.10	7 (9)	28.92	0.13	15 (17)				28.94	0.10	22 (26)
2007	0.00	0.00	0 (0)	0.00	0.00	0 (0)	26.82	0.17	9 (11)	29.06	0.08	23 (28)				28.88	0.08	32 (39)
2008	28.36	0.51	2 (2)	0.00	0.00	0 (0)	27.65	0.18	8 (11)	28.12	0.10	11 (20)				28.13	0.09	21 (33)
2009	25.55	0.48	2 (2)	0.00	0.00	0 (0)	25.08	0.11	9 (10)	26.91	0.08	26 (27)				26.71	0.07	37 (39)
2010	33.23	0.00	1 (1)	0.00	0.00	0 (0)	32.30	0.04	27 (64)	33.73	0.06	48 (58)				33.61	0.04	76 (123)
2011	41.45	0.42	4 (4)	0.00	0.00	0 (0)	31.77	0.13	14 (25)	30.90	0.18	15 (20)				32.99	0.12	33 (49)
2012	29.26	0.00	1 (1)	0.00	0.00	0 (0)	35.14	0.13	12 (17)	32.11	0.07	17 (25)				31.02	0.09	30 (43)
2013	0.00	0.00	0 (0)	0.00	0.00	0 (0)	24.94	0.08	9 (20)	24.61	0.05	59 (92)				24.63	0.04	68 (112)
2014	26.02	0.08	2 (2)	0.00	0.00	0 (0)	25.87	0.07	18 (45)	26.76	0.04	40 (46)				26.66	0.04	60 (93)
2015	36.78	0.14	7 (7)	0.00	0.00	0 (0)	30.80	0.06	27 (51)	36.22	0.07	68 (101)				36.13	0.05	102 (159)
2016	33.05	0.12	4 (4)	0.00	0.00	0 (0)	31.22	0.05	38 (53)	32.81	0.04	44 (55)				32.78	0.03	86 (112)
2017	0.00	0.00	0 (0)	0.00	0.00	0 (0)	32.83	0.10	13 (25)	35.64	0.05	30 (37)				35.55	0.05	43 (62)
2018	27.01	0.19	4 (4)	26.51	0.03	2 (3)	27.37	0.05	49 (85)	26.67	0.03	86 (99)				26.78	0.03	141 (191)
2019	28.80	0.08	4 (4)	0.00	0.00	0 (0)	26.66	0.05	36 (46)	29.64	0.03	70 (85)				29.39	0.02	110 (135)
2020	27.90	0.20	3 (3)	27.72	0.03	2 (3)	27.08	0.05	59 (90)	27.47	0.03	127 (140)				27.53	0.02	191 (236)
2021	0.00	0.00	0 (0)	0.00	0.00	0 (0)	27.04	0.05	34 (45)	27.92	0.04	76 (86)				27.80	0.03	110 (131)
2022	26.54	0.00	1 (1)	0.00	0.00	0 (0)	24.48	0.07	27 (39)	25.70	0.05	39 (46)				25.69	0.04	67 (86)
2023	24.85	0.12	2 (2)	0.00	0.00	0 (0)	25.24	0.07	12 (16)	26.07	0.06	31 (38)				25.99	0.05	45 (56)

Table 9. Recreational Fishing Effort (in angler trips) for Atlantic anglers by mode and year (MRIP). These effort estimates depict all (general) recreational fishing activity in the Atlantic and are not specific to Cobia. MRIP Headboat estimates are included from Virginia to Maine.

Year	Cbt	Cbt/Hbt	Hbt	Priv	Shore	Total
1981	218,080	2,675,775		17,765,901	34,007,002	54,666,758
1982	177,598	3,948,081		18,293,526	35,488,354	57,907,559
1983	240,707	3,086,778		18,960,548	37,465,725	59,753,758
1984	308,904	2,194,594		20,039,286	35,880,449	58,423,233
1985	320,042	2,199,145		22,500,116	34,287,470	59,306,773
1986	237,220	2,555,264		22,487,902	34,364,897	59,645,283
1987	249,335	1,749,097		21,588,527	34,419,954	58,006,913
1988	219,253	1,799,234		21,497,141	36,138,703	59,654,331
1989	233,891	1,599,779		21,664,812	36,751,891	60,250,373
1990	224,423	1,684,311		22,693,637	40,113,617	64,715,988
1991	219,983	1,856,123		22,754,553	40,799,495	65,630,154
1992	254,660	1,566,647		23,096,869	41,037,935	65,956,111
1993	253,341	2,195,281		23,568,468	41,906,506	67,923,596
1994	264,170	1,855,960		24,079,060	42,505,393	68,704,583
1995	269,052	1,973,135		24,291,643	42,437,852	68,971,682
1996	267,353	1,652,562		25,613,101	43,167,914	70,700,930
1997	268,618	1,733,223		27,780,753	45,284,094	75,066,688
1998	262,844	1,481,991		28,217,416	45,083,354	75,045,605
1999	249,191	1,452,480		29,971,784	49,827,082	81,500,537
2000	268,760	1,530,369		32,467,729	54,271,568	88,538,426
2001	259,955	1,601,931		33,503,927	56,328,542	91,694,355
2002	265,573	1,436,232		34,002,275	55,374,503	91,078,583
2003	267,775	1,579,900		35,092,246	57,716,219	94,656,140
2004	1,015,109		674,260	36,623,026	59,354,499	97,666,894
2005	1,222,234		767,540	37,161,398	60,477,945	99,629,117
2006	998,467		649,374	37,423,372	62,721,146	101,792,359
2007	1,467,926		971,084	38,139,032	60,228,146	100,806,188
2008	1,055,062		871,784	38,625,010	63,611,011	104,162,867
2009	1,024,916		790,333	39,264,641	63,911,446	104,991,336
2010	831,727		580,114	41,666,922	67,239,285	110,318,048
2011	1,029,257		600,817	40,156,011	65,577,692	107,363,777
2012	931,164		628,596	39,335,516	64,427,619	105,322,895
2013	1,088,554		968,396	37,872,952	62,103,965	102,033,867

Year	Cbt	Cbt/Hbt	Hbt	Priv	Shore	Total
2014	1,087,502		831,745	36,807,698	63,121,977	101,848,922
2015	1,196,358		696,087	34,715,854	61,414,441	98,022,740
2016	698,979		470,309	34,597,161	64,448,600	100,215,049
2017	772,746		596,982	35,192,629	62,657,638	99,219,995
2018	818,730		535,555	28,798,072	55,095,930	85,248,287
2019	905,712		598,715	31,572,749	60,506,883	93,584,059
2020	701,572		496,200	33,856,675	60,106,986	95,161,433
2021	1,078,369		495,785	31,747,899	61,557,114	94,879,167
2022	841,655		443,293	35,475,818	65,249,468	102,010,234
2023	941,067		488,299	33,619,048	59,102,347	94,150,761

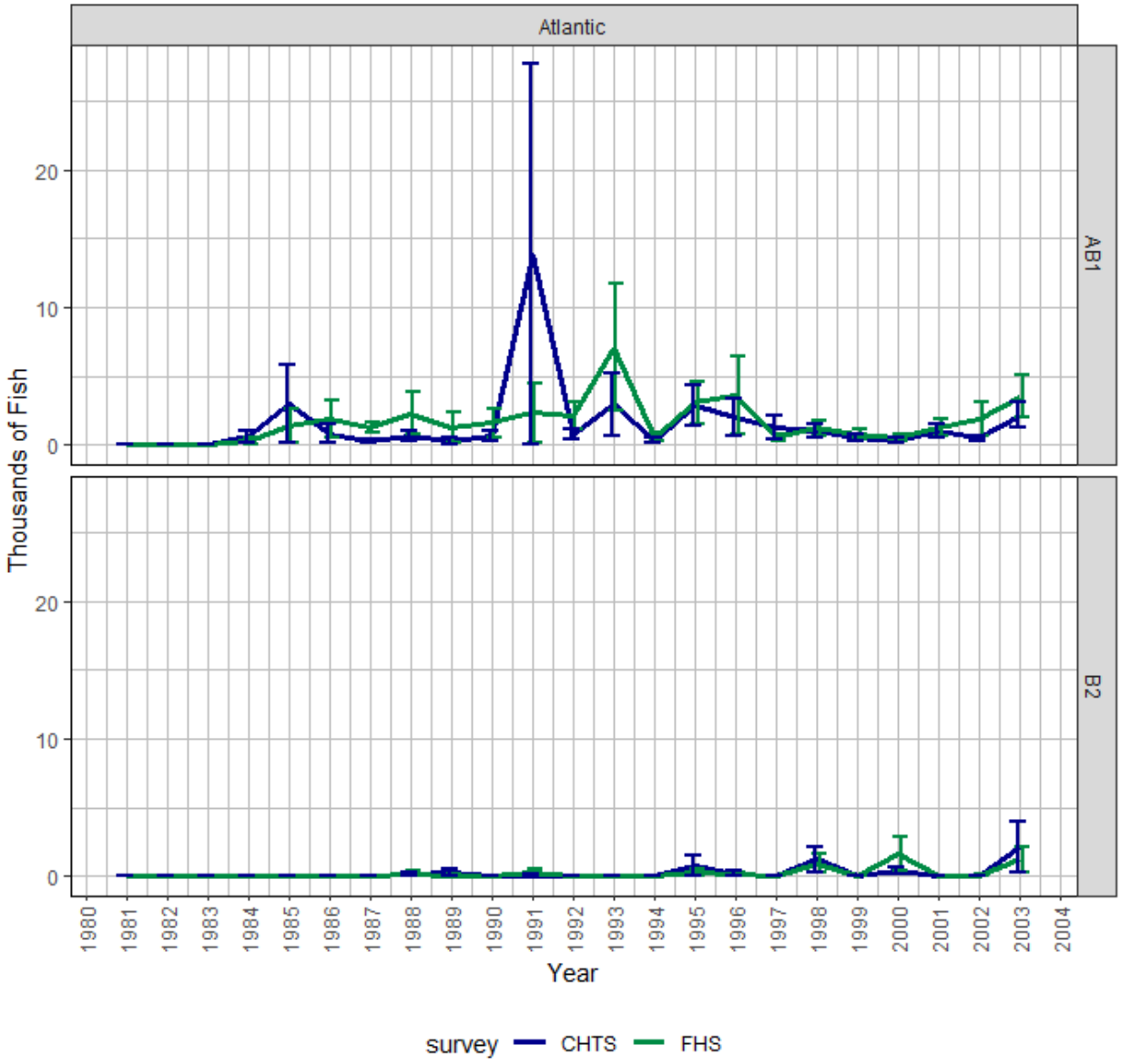

Figure 1. *Comparison of Charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Cobia from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Atlantic between 1981 and 2003 (MRIP). The Charterboat calibration approach is discussed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

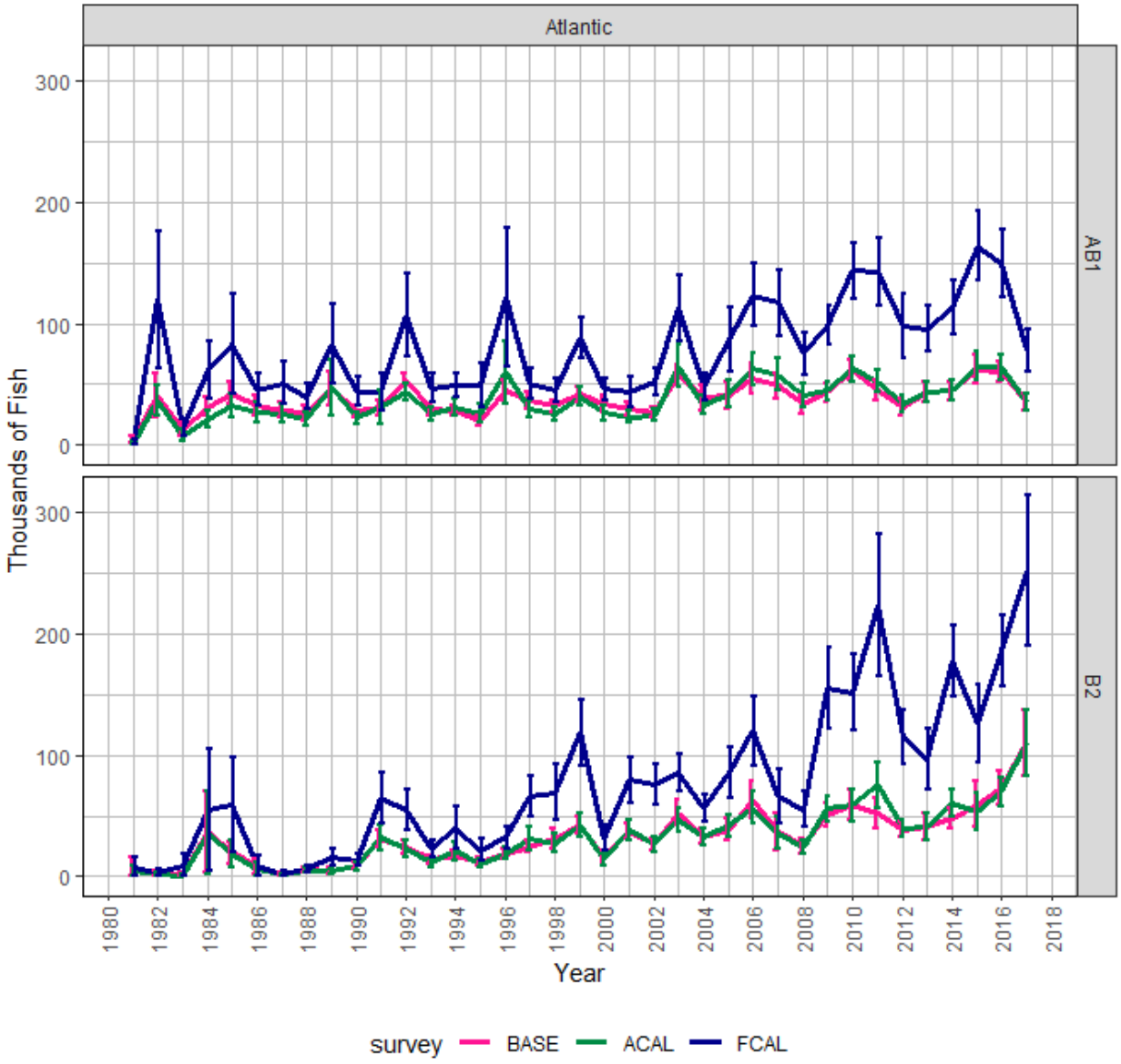

Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) estimates for Cobia in the Atlantic between 1981 and 2017. Estimates in this figure include East Florida as these domains are not separable from those used by the MRIP online comparison tool for the Atlantic (NMFS pers comm).*

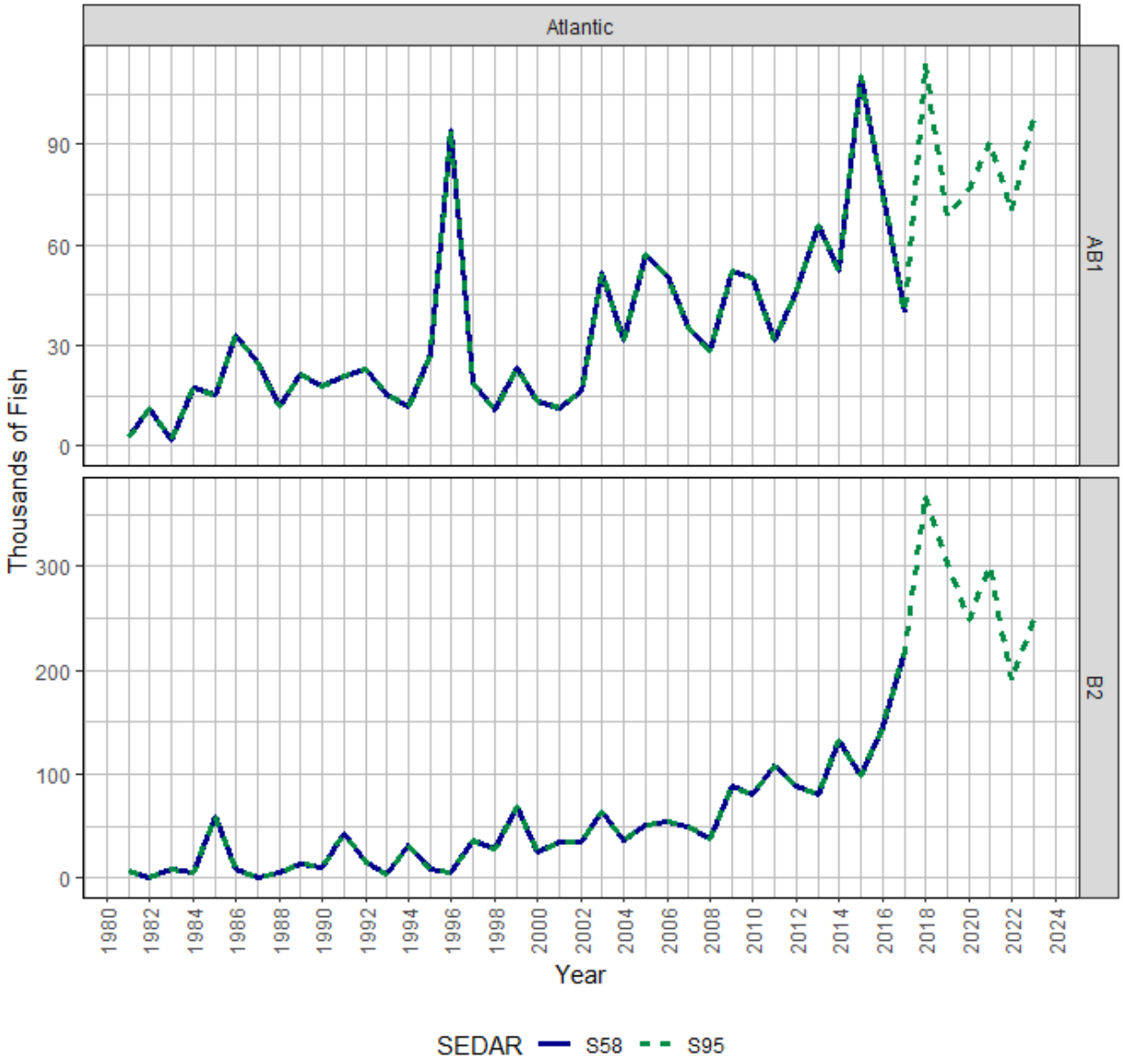

Figure 3. *Comparison of total general recreational landings (AB1) and discard estimates (B2) for Atlantic Cobia between SEDAR 95 and SEDAR 58, the terminal years of which are 2023 and 2017 respectively.*

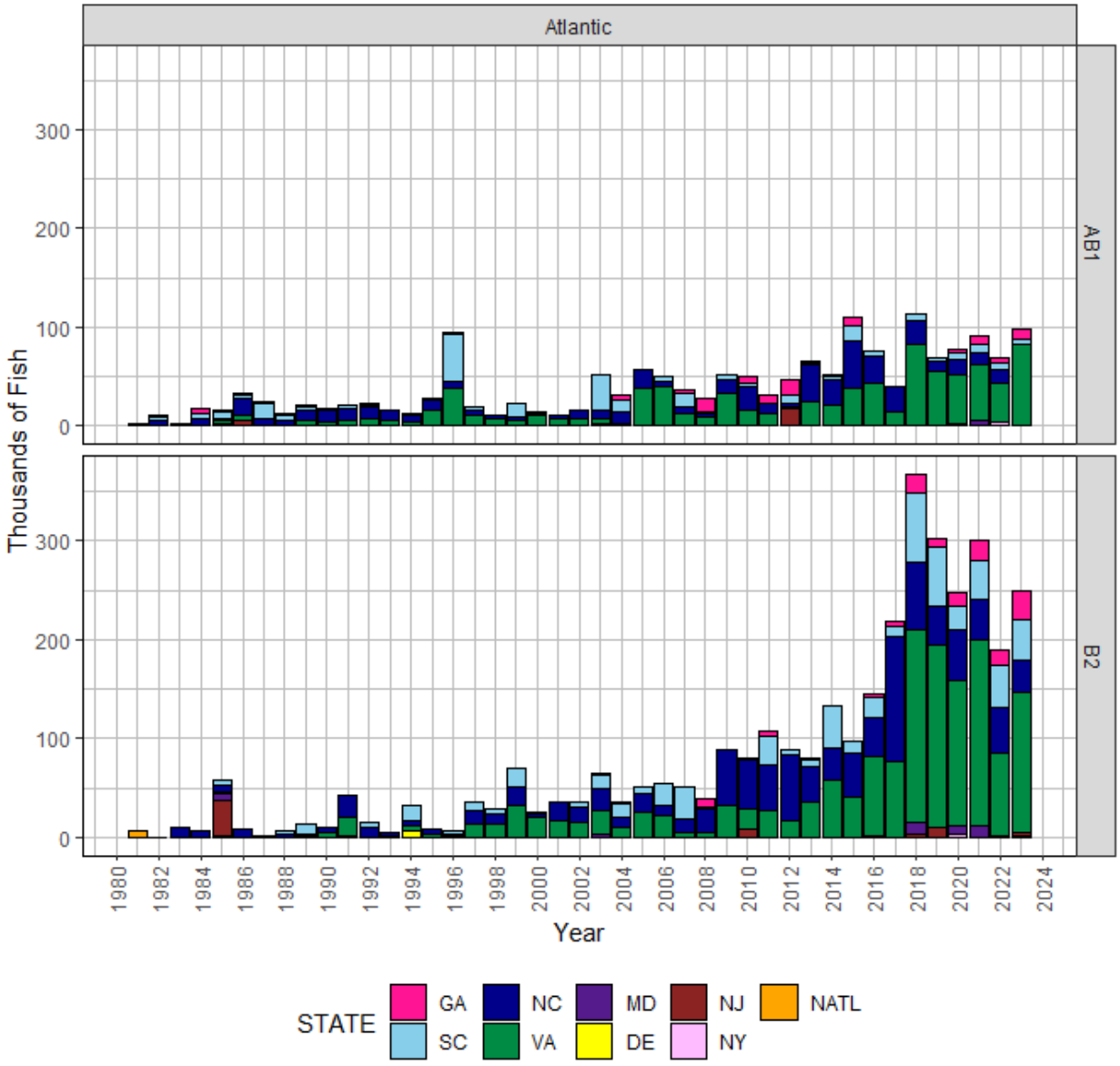

Figure 4. *Annual Cobia landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2023 (MRIP). North Atlantic (NATL; CT to ME) states contributed less than ten percent to the total catch (Table1, Fig4a) and were combined for plotting purposes.*

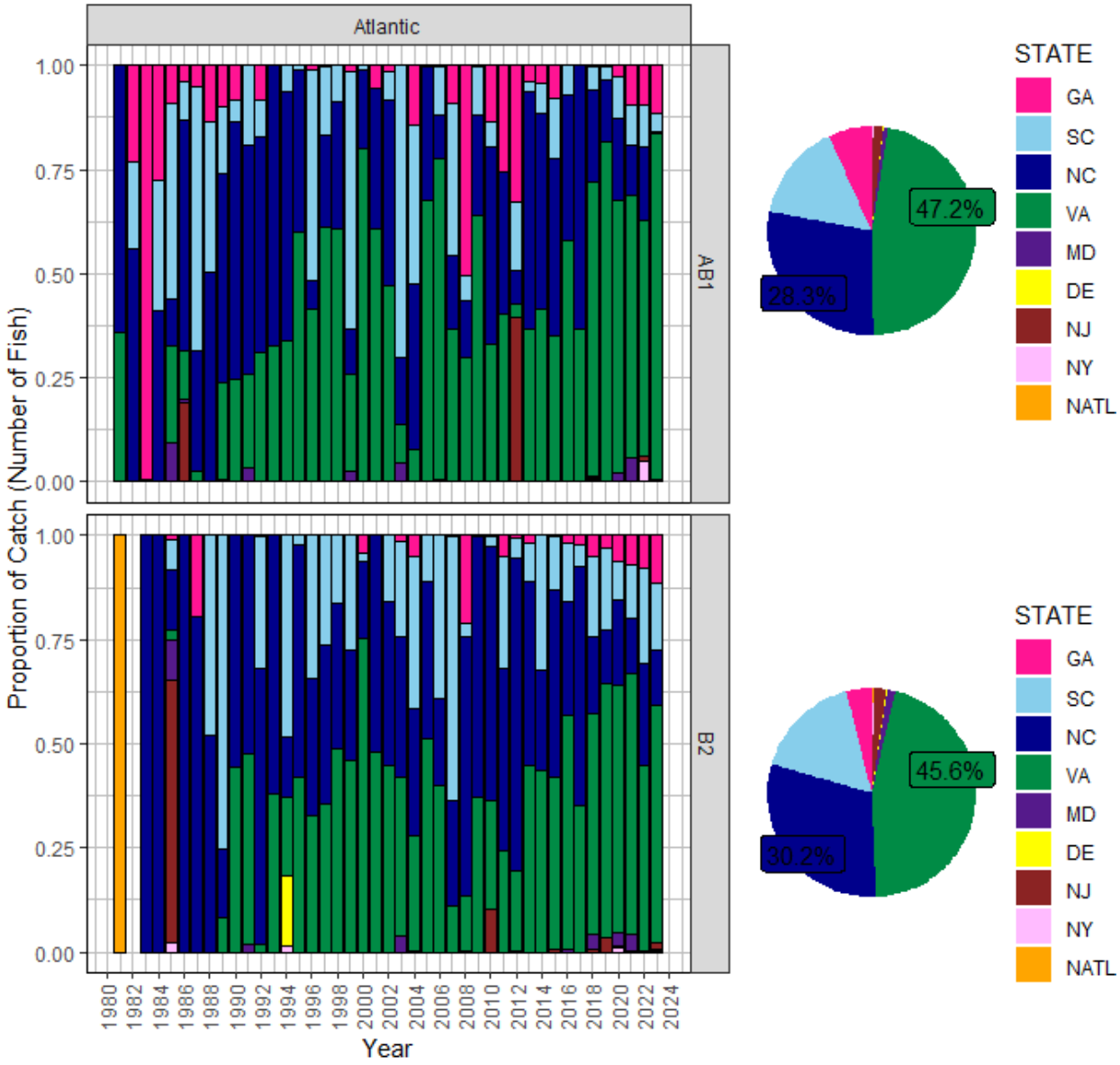

Figure 4a. *Proportion of Cobia landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2023 (MRIP). North Atlantic (NATL; CT to ME) states were combined for plotting purposes.*

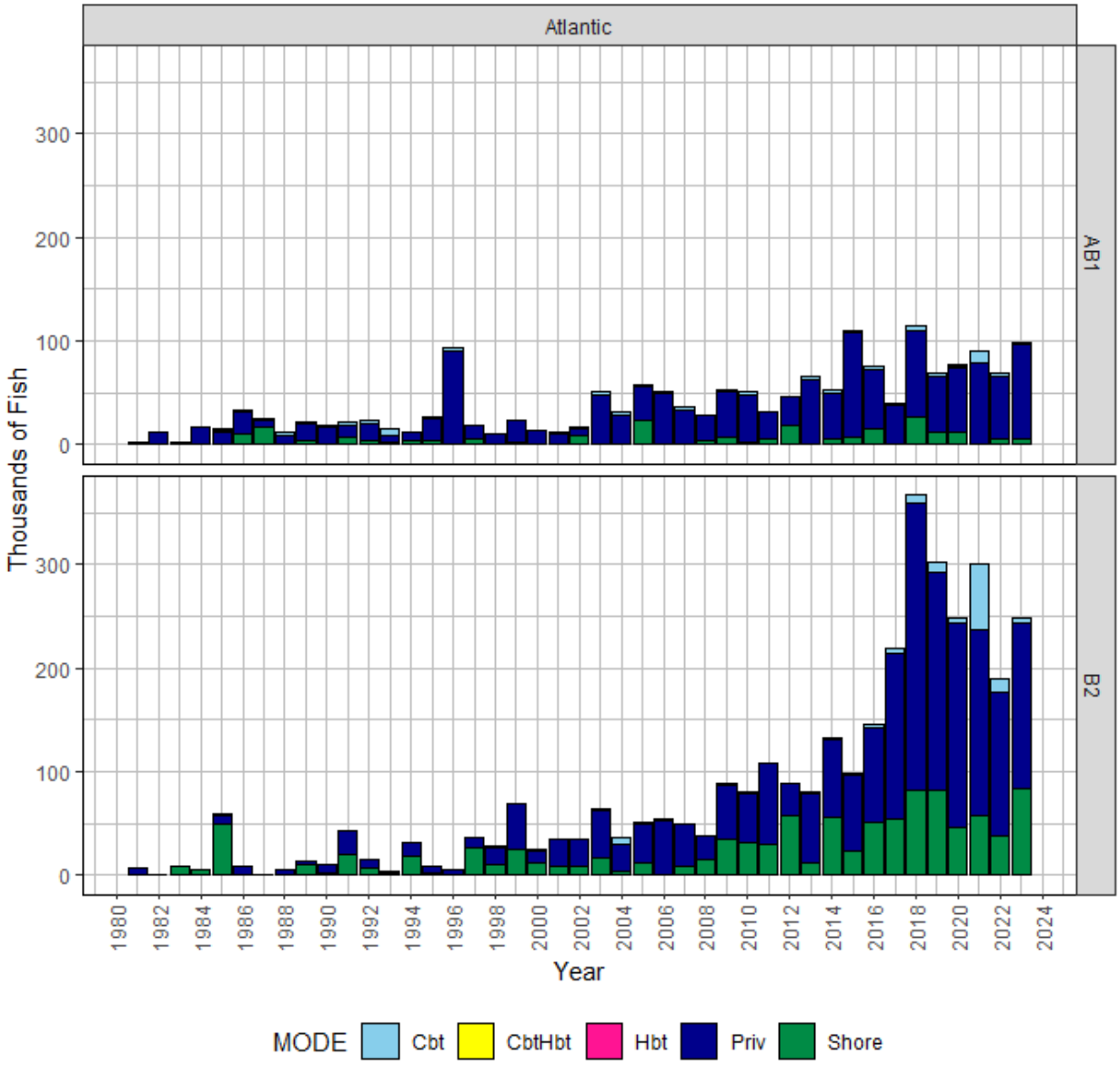

Figure 5. *Annual Cobia landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2023 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.*

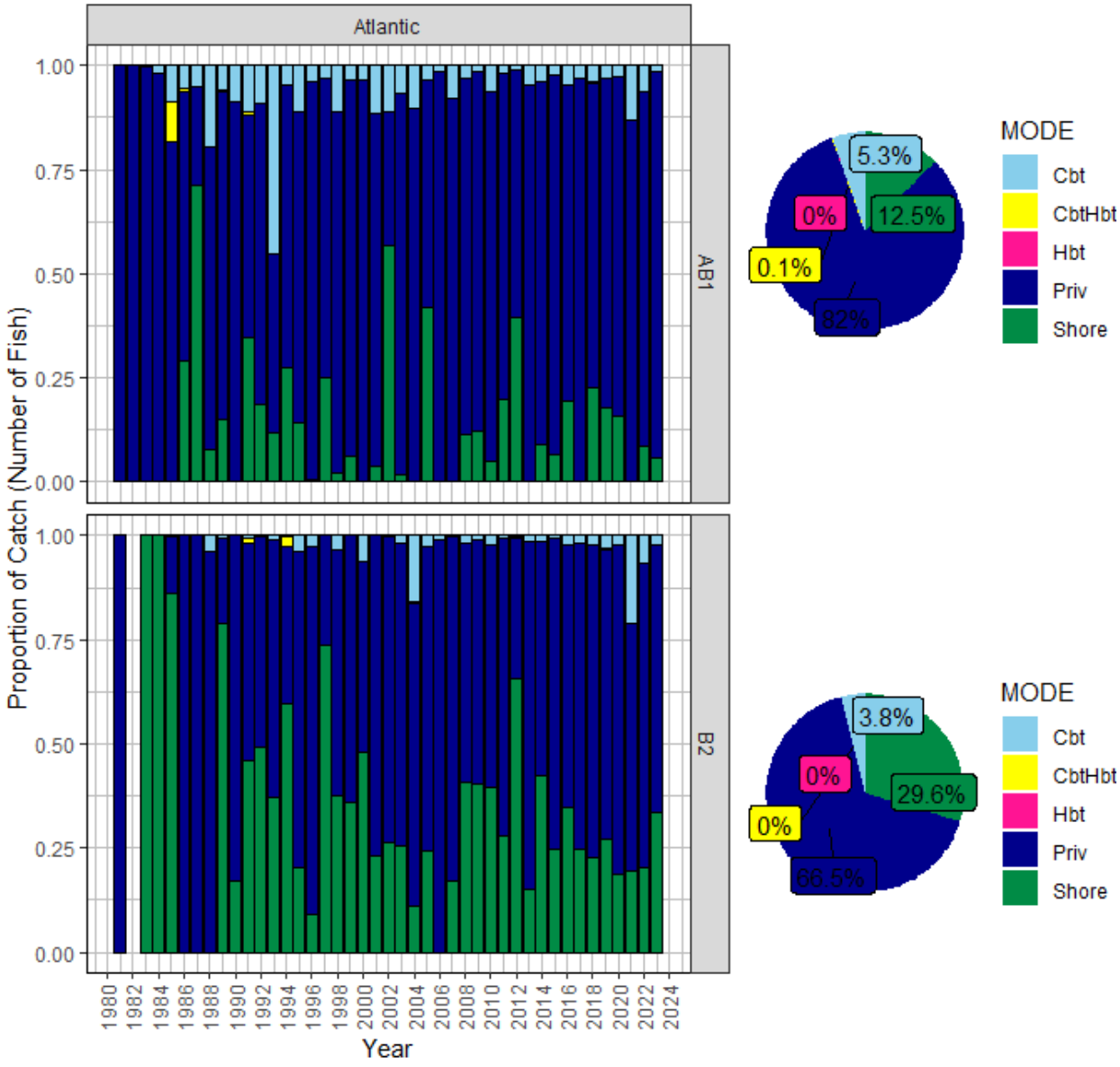

Figure 5a. *Proportion of Cobia landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2023 (MRIP). MRIP Headboat estimates are included from Virginia to Maine.*

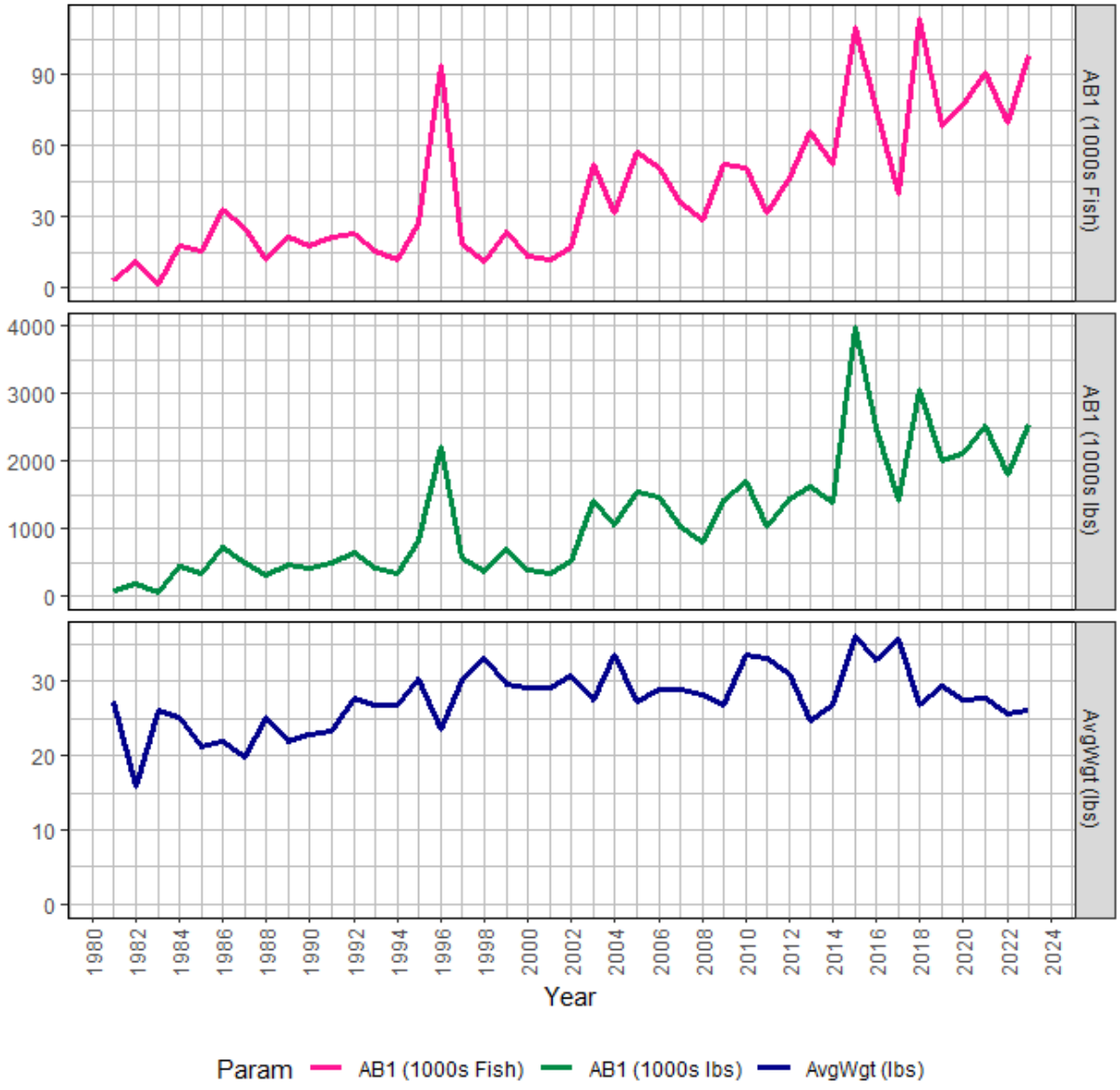

Figure 6. *Estimates of annual landings for Cobia in the Atlantic (MRIP): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). See Appendix for average weight calculation methods.*

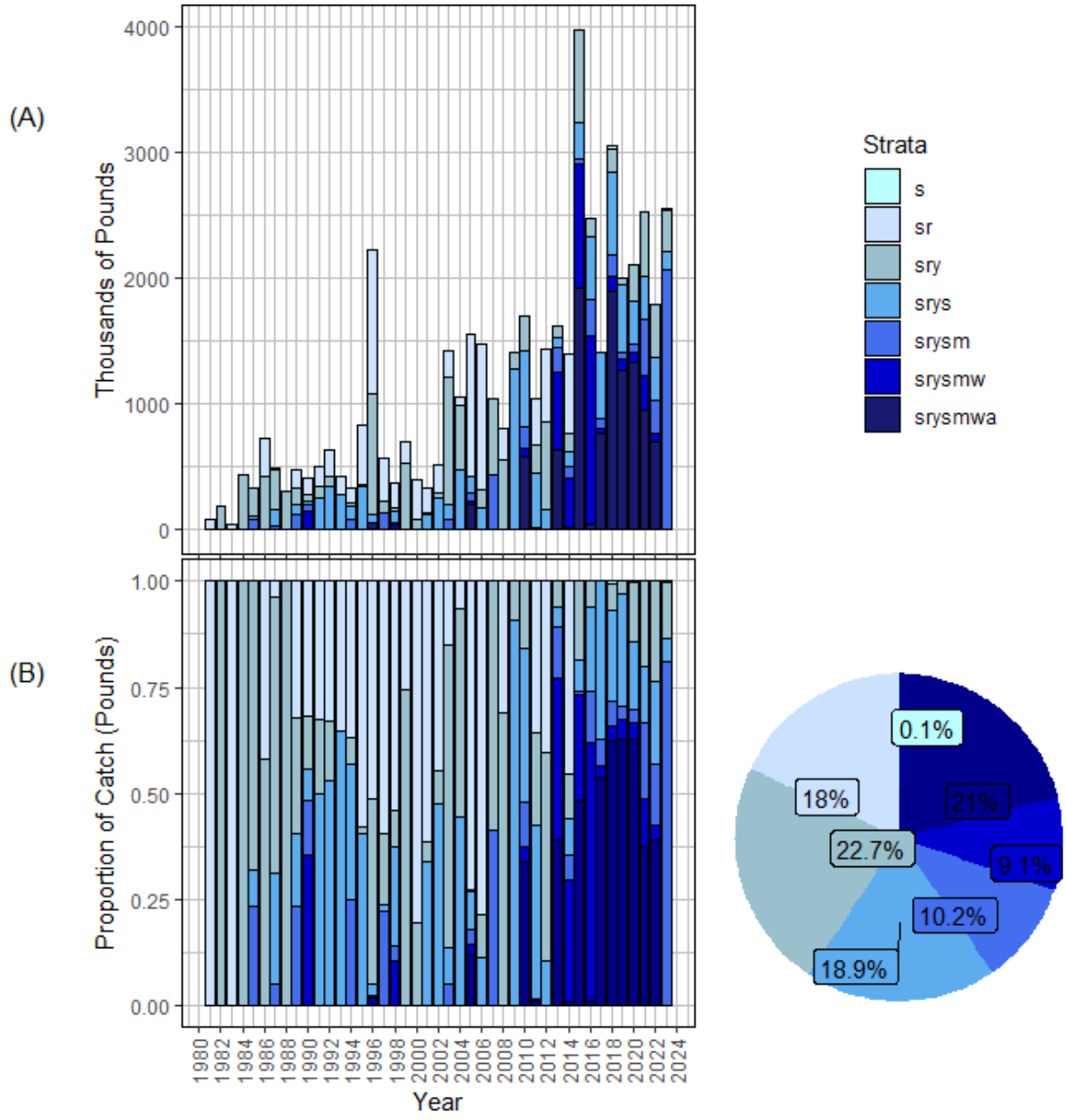

Figure 8. *Annual landings estimates of Atlantic Cobia in thousands of pounds whole weight by hierarchy level (MRIP), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata at which average weights were estimated. 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). 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. Landings are provided (A) in absolute pounds and (B) as a percentage of total landings-in-weight, which is summarized by year (stacked bar graph) and across all years (pie chart).*

(A)

Wave	Cbt		Hbt	Priv		Shore	
	IMP	RAW	IMP	IMP	RAW	IMP	RAW
2	3			4			
3	72	92	4	186	149	23	17
4	2	105	6	55	260		23
5		35	5		62		12
6		2			1		1

(B)

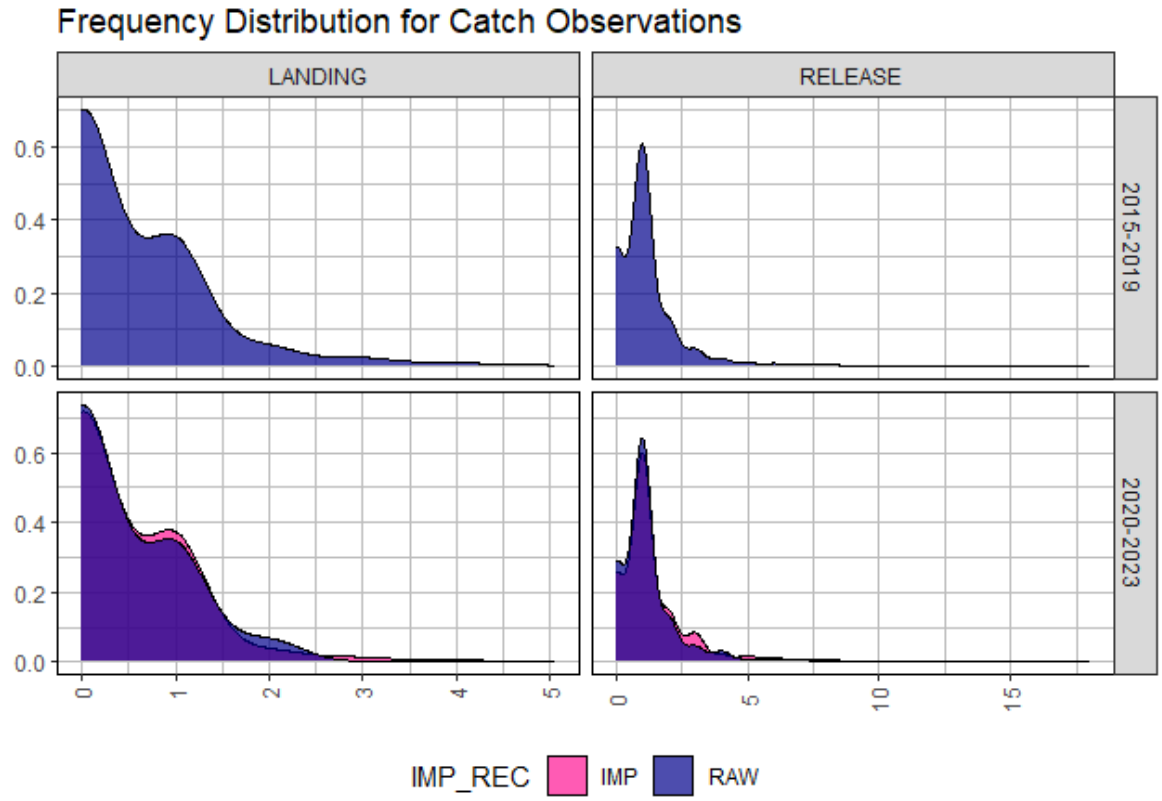

Figure 9. *COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted Atlantic Cobia. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020-2021-2022-2023 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2020-2023), in raw 2020-2021-2022-2023 APAIS data, and in 2020-2021-2022-2023 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 Calibrations: 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; 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 the For-Hire mode 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.
- SEFSC Weight Estimation: Average (fish) weight estimates are calculated in whole weight 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 95 Cobia, this includes any weights heavier than 157.08 pounds.
- SEFSC Estimates derived using SEDAR best practices (SEDAR-PW-07):
  - 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 North Carolina, this includes domains north and south of Cape Hatteras.
  - Between 1981 and 1985 in the South Atlantic, MRIP charter and headboat modes were combined into a single (for-hire) mode for estimation purposes. Since the NMFS Southeast Region Headboat Survey (SRHS) began in 1981 in the South Atlantic, the MRIP combined for-hire mode must be split to avoid double counting of estimated headboat landings in these early years. Estimates for the MRIP for-hire mode (1981-1985) were split using a ratio of SRHS headboat angler trip estimates to MRIP charterboat angler trip estimates for 1986-1990, calculated by state (or state equivalent to match SRHS areas to MRIP states).