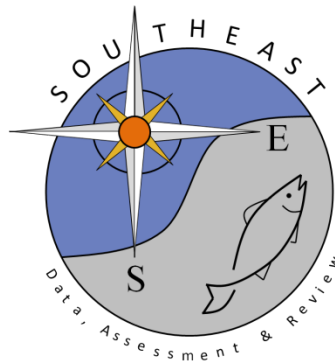


Headboat Data for Cobia in the Southeast US Atlantic

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1 Survey Description

The Southeast Region Headboat Survey (SRHS) estimates landings and effort for headboats in the U.S. South Atlantic and Gulf of America. The survey began in 1972 in North Carolina and South Carolina. It expanded to northeast Florida (Nassau-Indian River counties) and Georgia in 1976, followed by southeast Florida (St. Lucie-Monroe counties) in 1978 (Chester et al. 1984; Grimes and Hollingsworth 1979; Huntsman 1976; Huntsman, Colby, and Dixon 1978). The SRHS was implemented in the Gulf of America in 1986, extending from Naples, FL, to South Padre Island, TX.

Annually, the survey includes approximately 70-80 participating vessels in each region (Table 1). Headboat data are considered confidential and cannot be publicly distributed if fewer than three vessels contribute to a data product.

The SRHS implemented mandatory electronic logbook reporting in the South Atlantic and Gulf of America as of January 1, 2013. Headboat operators now report trip information via a website or mobile application. A review of the headboat data methodology and validity was conducted in 2015 for the Atlantic waters of the Southeastern U.S. (Fitzpatrick et al. 2017; SEDAR 2015). Panelists concluded that the SRHS data products represent the best available information for regional headboat data and recommended their use in stock assessments. This conclusion also applies to the Gulf of America, as the data collection methodology is identical.

Paper logbook forms varied by region and year, primarily due to space limitations in the survey's early years. The predominant species listed on these forms varied by region, and the number of species listed generally increased over time. All forms included blank lines to write in species not explicitly listed. Cobia were added to the form in 1984 in NC and SC but high profile species would most likely been written in the extra spaces provided. Since the transition to electronic logbooks in 2013, a comprehensive list of all species is available to users.

Reporting of discards was added to the logbook form in 2004. Due to confusion regarding the condition of released fish, only total discards have been reported since 2013. For consistency, data from 2004 to 2012, which originally distinguished between live and dead releases, are typically combined to represent total discards.

The area definitions for the SRHS were modified in 2013, primarily to remove the inshore-offshore distinction for the Carolinas and to create state-specific areas for the Gulf of America. A few other areas were collapsed in the Florida Keys and on the west coast of Florida (Figures 1 and 2).

For this assessment, "state" is used to define finer-scale regions, as advised by assessment staff. The Terms of Reference suggested review of the stock structure and unit stock definitions. For this reason North Florida (NFL), South Florida (SFL), and the South region (NFL and SFL combined) were included in the data provision. The North region would be equivalent to the SEDAR 58 stock assessment input. Florida areas were included in the data provision based on terms of reference number 1; review stock structure and unit stock definition. The assignment of SRHS areas to these state-based regions is as follows:

- Areas 1,2,3,9,10 - NC
- Areas 4,5,6 - GASC
- Areas 7,8 - NFL
- Areas 11,12,17 - SFL
- Areas 1,2,3,4,5,6,9,10 - North Region
- Areas 7,8,11,12,17 - South Region

The SRHS dockside sampling was suspended in March 2020 due to the COVID-19 pandemic, and no biological samples were collected during this time. However, port agents continued to monitor reporting compliance to ensure captains submitted trip-level catch and effort data via electronic logbooks. Consequently, reported catch and effort data were used to estimate 2020 landings and effort with no disruption. To convert landings from number of fish to weight, mean weights from 2019 were applied to the 2020 landings numbers. Port agents maintained QA/QC checks and database validations for their areas of responsibility and provided outreach to captains regarding new for-hire reporting requirements. Biological sampling did not resume until the NMFS/SEFSC approved new safety measures in July 2021, though some port agents supported by state agencies returned to dockside sampling earlier.

2 Methods

2.1 Landings

The SRHS uses a two-component system to estimate catch and effort:

1. Logbook Reporting: Vessel personnel complete a logbook for each trip, reporting total catch and effort. Port agents identify missing trip reports by contacting the vessel's captain or office, through personal observations, by reviewing weekly compliance reports, and using other methods. If trips are not reported, the monthly catch estimated for the vessel is increased by the proportion of trips missing. In the early years of the survey, when compliance was low, catch from another similarly sized vessel from the same area was adjusted based on the observed number of trips and substituted when vessels failed to report landings. Reporting compliance has been near 100% since permits were linked to reporting requirements in 2008. The proportion of trips reported is the primary information used to develop a proxy for uncertainty estimates.

2. Dockside Sampling: Port samplers collect fish size data dockside, measuring fish to the nearest millimeter (mm) and weighing them to the nearest 0.01 kg. These data are used to calculate mean weights by species, area, and month, which are then used to convert reported landings from number of fish to total weight.

2.2 Discards

In 2004, the SRHS logbook was modified to collect self-reported discards, categorized as “released alive” or “released dead.” Captains were instructed that a fish is “released alive” if it can swim away on its own and “released dead” if it floats or is obviously unable to swim. As of January 1, 2013, with the transition to electronic reporting, the logbook was simplified to collect only the total number of fish released, regardless of condition.

Some under-reporting and misunderstanding of the requested data were identified in the initial years of discard data collection (2004-2007). Annual catch rates from the at-sea headboat observer program can be compared to logbook catch rates to evaluate the validity of logbook discard data from this period. Starting in January 2023, two fields were added to the logbook form: number of discards descended and number vented. These will be used to quantify the prevalence and effectiveness of fish descending devices and venting tools, which are required on board in both the South Atlantic and Gulf of America.

2.3 Uncertainty

Uncertainty estimates for headboat landings were initially developed for the SEDAR 68 scamp research track assessment (Nuttall et al. 2020). While statistically valid, the approach used the uncertainty of reported landings (across areas, months, and vessels) as a proxy for uncertainty in total landings estimates, which produced unrealistic coefficients of variation (CVs) in some years. For example, some years with only 60% of vessels reporting had CVs of approximately 0.05. As an alternative, a proxy CV method was developed for the SEDAR 74 red snapper research track data workshop. This method relies on the proportion of reported trips (N) to total estimated trips (n) and adds a buffer of 0.05 to prevent the CV from reaching zero.

$$proxyCV = 1 - \frac{N}{n} + 0.05 \text{ (SEDAR 2022)}$$

This proxy CV method was refined for the SEDAR 82 gray triggerfish research track data workshop to account for spatial variability in species abundance and reporting compliance. To address concerns that high CVs could be estimated for strata with low overall compliance even if compliance was high in the areas with the most catch, compliance rates are now weighted by the associated landings estimates:

$$proxyCV_i = 1 - \sum_j \left(\frac{n_{i,j}}{N_{i,j}} \cdot \frac{L_{i,j}}{\sum_j L_{i,j}} \right) + 0.05$$

where n is the number of reported trips, N is the number of estimated trips, and L is the landings in number for year i and state/region j.

2.4 Effort

Catch and effort data were reported on paper logbooks until 2012 and electronically since 2013. After each trip, the owner, captain, or a designated crew member enters the total number of all species landed and discarded. Effort is reported as the number of anglers per trip and is standardized into **angler-day** by multiplying the number of anglers by a trip-length factor (e.g., 40 anglers on a half-day trip yields 40×0.5=20 angler-days).

As with landings, effort is expanded to account for missing trips. Effort estimates for Louisiana are zero for 2004 and 2005. During this time, only one or two vessels were active and did not report catch in 2002, 2004, 2005, or 2006 due to funding and staffing issues. Additionally, Hurricane Katrina severely impacted Louisiana fishing operations from August 2005 through much of 2006. Alabama was assigned a separate area code in 2013; prior to this, it was combined with northwest Florida. Mississippi was added to the survey in 2010.

Angler-day is considered the best practice unit of effort for headboat data. **Angler-trip** is calculated to match units for general recreational effort from the Marine Recreational Information Program (MRIP) for the purpose of combining effort across sectors if required. There are some caveats with the method because it does not account for all effort expansions in the standard estimation method or the duration of the trip.

2.5 Biological Samples

Length data have been collected by SRHS dockside samplers since the survey's inception. Weights are typically collected for the same fish measured during dockside sampling. Other biological samples (scales, otoliths, spines, stomachs, gonads) and data (sex determination) are collected routinely for ageing, diet, and maturity studies. Port agents are provided with lists of priority species, but no specific sampling quotas are assigned.

3 Results and Discussion

3.1 Landings

Landings in number are given by state (Table 2, Figure 3) and region (Table 3, Figure 4). Landings in pounds are shown by state (Table 4, Figure 5) and by region (Table 5, Figure 6). The southern region had relatively higher landings of cobia over the course of the survey (Tables 2 - 5, Figures 4 - 6).

The SEDAR 107 landings for cobia were identical to the SEDAR 58 landings for overlapping years (Figure 7).

3.2 Discards

Discards by state and region are primarily from the south region (Tables 6 - 7, Figures 8 - 9). There is no information within the SRHS on the size of these fish with which to convert the discards in number to weight. Lengths collected by observer programs could be used to inform the length compositions.

3.3 Confidentiality

Headboat landings and discards are confidential if fewer than three vessels contributed logbook records for any strata. The number of vessels reporting by state, region, and annually are given in tables 8 - 10. For cobia, the regional catch and discards can be released to the public. State-level landings can be released if 1984 and 2022 for NC and SC are excluded.

3.4 Uncertainty

Unweighted proxy CV estimates by state, region and overall are provided in tables 11 - 13. Regional proxy CV values weighted by state landings in number and weight are given in tables 14 and 15. Annual weighted proxy CV values weighted by regional landings in number and weight are provided in tables 16 and 17. The weighted proxy CVs should provide the best estimate for uncertainty.

3.5 Effort

Total estimated headboat angler days and angler trips decreased until about 2010 followed by an increase until 2015 after which it has been relatively constant (Tables 18 - 19). The same trend is seen in the regional effort estimates but more extreme in the South (Tables 20 - 21, Figure 11). The finer scale effort estimates by state show the pattern observed in effort is consistent across states with the exception of NC in the early years (Tables 22 - 23, Figure 10). Reports from industry staff, captains or owners, and port agents indicated fuel prices, the economy and fishing regulations are the factors that most affected the amount of trips, number of passengers, and overall decrease in fishing effort through 2010.

3.6 Biological Samples

Annual numbers of cobia measured for natural total length in the headboat fleet by state and region are given in tables 24 - 25. The number of trips from which cobia were measured are summarized in Tables 26 - 27. Mean total lengths (mm) and weight (g) and associated CVs for the headboat fishery are tabulated by state and region in Tables 28 - 35. Patterns in length and weight by year and region are shown in Figures 12 and 13.

4 Tables

Table 1: Number of vessels in the SRHS by year and region (Gulf - SW Florida to Texas, Atlantic - North Carolina to SE Florida).

year	Atlantic	Gulf
1980	89	
1981	92	
1982	89	
1983	86	
1984	90	
1985	89	
1986	94	87
1987	94	79
1988	94	72
1989	95	95
1990	93	88
1991	94	80
1992	105	80
1993	95	81
1994	95	84
1995	89	82
1996	90	73
1997	92	70
1998	89	73
1999	86	69
2000	89	72
2001	84	72
2002	77	61
2003	68	65
2004	81	65
2005	76	74
2006	76	70
2007	78	69
2008	84	71
2009	82	76
2010	86	78
2011	77	73
2012	78	71
2013	76	68
2014	76	68
2015	73	68
2016	76	69
2017	66	71
2018	65	72
2019	65	72
2020	66	68
2021	62	70
2022	62	68
2023	61	68
2024	62	68
2025	63	64

Table 2: Cobia landings by state in number (conf - confidential).

year	NC	GASC	NFL	SFL	Total
1981	85	0	540	833	1458
1982	37	13	1006	1168	2224
1983	44	13	802	842	1701
1984	conf	conf	1128	654	1850
1985	16	32	1056	613	1717
1986	53	55	1111	542	1761
1987	43	97	1041	912	2093
1988	82	82	1369	776	2309
1989	79	70	1194	936	2279
1990	154	49	962	961	2126
1991	203	160	1755	834	2952
1992	201	101	1673	797	2772
1993	116	114	1791	1165	3186
1994	180	118	1073	864	2235
1995	184	147	761	710	1802
1996	46	76	583	547	1252
1997	91	216	751	320	1378
1998	51	200	599	360	1210
1999	48	113	650	424	1235
2000	66	141	621	341	1169
2001	95	156	867	224	1342
2002	75	197	731	353	1356
2003	48	69	573	135	825
2004	82	125	529	119	855
2005	83	101	515	1149	1848
2006	40	96	743	142	1021
2007	32	574	862	549	2017
2008	32	203	904	263	1402
2009	5	148	772	371	1296
2010	20	116	705	865	1706
2011	19	104	645	520	1288
2012	25	112	551	886	1574
2013	51	172	538	776	1537
2014	78	157	495	1056	1786
2015	39	89	588	545	1261
2016	31	53	639	510	1233
2017	4	0	385	271	660
2018	12	58	335	289	694
2019	5	79	292	421	797
2020	3	73	359	162	597
2021	22	48	504	103	677
2022	conf	conf	377	165	563
2023	12	60	203	74	349
2024	13	39	109	88	249
2025	7	96	101	70	274

Table 3: Cobia landings by region in number. The north region represents the stock boundary defined in SEDAR 58.

year	North	South	Total
1981	85	1373	1458
1982	50	2174	2224
1983	57	1644	1701
1984	68	1782	1850
1985	48	1669	1717
1986	108	1653	1761
1987	140	1953	2093
1988	164	2145	2309
1989	149	2130	2279
1990	203	1923	2126
1991	363	2589	2952
1992	302	2470	2772
1993	230	2956	3186
1994	298	1937	2235
1995	331	1471	1802
1996	122	1130	1252
1997	307	1071	1378
1998	251	959	1210
1999	161	1074	1235
2000	207	962	1169
2001	251	1091	1342
2002	272	1084	1356
2003	117	708	825
2004	207	648	855
2005	184	1664	1848
2006	136	885	1021
2007	606	1411	2017
2008	235	1167	1402
2009	153	1143	1296
2010	136	1570	1706
2011	123	1165	1288
2012	137	1437	1574
2013	223	1314	1537
2014	235	1551	1786
2015	128	1133	1261
2016	84	1149	1233
2017	4	656	660
2018	70	624	694
2019	84	713	797
2020	76	521	597
2021	70	607	677
2022	21	542	563
2023	72	277	349
2024	52	197	249
2025	103	171	274

Table 4: Cobia landings by state in pounds (conf - confidential).

year	NC	GASC	NFL	SFL	Total
1981	1565	0	9806	18253	29623
1982	644	227	16401	19959	37231
1983	1308	228	21135	15426	38097
1984	conf	conf	22098	12483	36284
1985	357	713	20014	10461	31544
1986	910	821	21194	9299	32224
1987	710	1601	35251	19698	57259
1988	1984	1796	27540	16758	48079
1989	1535	1477	26106	19367	48484
1990	4403	1319	25429	22716	53867
1991	3856	3126	30910	18382	56273
1992	4505	2231	40715	18266	65718
1993	2243	2486	35902	22847	63477
1994	3512	2300	22549	19773	48133
1995	3896	3110	17238	16121	40366
1996	1347	2192	15593	14630	33763
1997	2179	5117	14003	5946	27245
1998	1286	4907	16363	8327	30883
1999	971	2342	14157	9391	26861
2000	1397	2985	13222	8052	25656
2001	2190	3764	20545	4601	31099
2002	1739	4428	14286	6513	26966
2003	1040	1496	11078	2883	16498
2004	2552	3843	13273	2490	22158
2005	1857	2271	10390	21826	36343
2006	808	1925	15897	3666	22297
2007	544	9666	16418	11557	38186
2008	775	6136	23667	5453	36031
2009	90	2836	18038	6793	27756
2010	492	3036	20851	17276	41655
2011	332	1869	17075	12134	31409
2012	343	1513	11555	20333	33743
2013	1444	4891	13532	16082	35948
2014	2068	4535	12437	22772	41813
2015	693	1645	12421	10133	24892
2016	520	906	11073	9718	22217
2017	85	0	9929	5686	15699
2018	312	1496	6343	5168	13319
2019	119	1845	5730	7351	15045
2020	50	1213	5883	2639	9784
2021	365	795	8334	1690	11184
2022	conf	conf	10606	3243	14363
2023	378	2121	7531	1745	11776
2024	252	753	2644	2383	6032
2025	213	2964	3273	1946	8396

Table 5: Cobia landings by region in pounds. The north region represents the stock boundary defined in SEDAR 58.

year	North	South	Total
1981	1565	28059	29623
1982	871	36360	37231
1983	1536	36561	38097
1984	1702	34581	36284
1985	1070	30474	31544
1986	1731	30493	32224
1987	2311	54948	57259
1988	3780	44298	48079
1989	3012	45473	48484
1990	5721	48146	53867
1991	6981	49292	56273
1992	6737	58981	65718
1993	4729	58748	63477
1994	5812	42321	48133
1995	7006	33359	40366
1996	3540	30223	33763
1997	7296	19949	27245
1998	6193	24690	30883
1999	3313	23548	26861
2000	4382	21274	25656
2001	5953	25145	31099
2002	6167	20799	26966
2003	2536	13962	16498
2004	6395	15763	22158
2005	4127	32216	36343
2006	2734	19564	22297
2007	10211	27975	38186
2008	6911	29120	36031
2009	2925	24831	27756
2010	3527	38127	41655
2011	2200	29209	31409
2012	1855	31888	33743
2013	6334	29614	35948
2014	6604	35209	41813
2015	2338	22554	24892
2016	1426	20791	22217
2017	85	15614	15699
2018	1808	11511	13319
2019	1964	13081	15045
2020	1262	8522	9784
2021	1160	10024	11184
2022	514	13849	14363
2023	2499	9276	11776
2024	1005	5027	6032
2025	3177	5219	8396

Table 6: Cobia discards by state in number of fish (conf - confidential).

year	NC	GASC	NFL	SFL	Total
2004	2	14	52	4	72
2005	0	10	93	464	567
2006	0	12	361	30	403
2007	0	36	215	67	318
2008	0	22	656	116	794
2009	5	158	633	423	1219
2010	0	151	432	426	1009
2011	3	28	181	337	549
2012	2	48	733	697	1480
2013	4	63	373	674	1114
2014	14	85	545	1096	1740
2015	1	71	853	485	1410
2016	13	90	545	575	1223
2017	27	124	360	353	864
2018	18	121	569	453	1161
2019	8	269	611	351	1239
2020	3	78	954	337	1372
2021	24	124	2126	216	2490
2022	conf	conf	800	287	1150
2023	3	156	1300	231	1690
2024	2	61	576	493	1132
2025	3	35	473	522	1033

Table 7: Cobia discards by region in number of fish. The north region represents the stock boundary defined in SEDAR 58.

year	North	South	Total
2004	16	56	72
2005	10	557	567
2006	12	391	403
2007	36	282	318
2008	22	772	794
2009	163	1056	1219
2010	151	858	1009
2011	31	518	549
2012	50	1430	1480
2013	67	1047	1114
2014	99	1641	1740
2015	72	1338	1410
2016	103	1120	1223
2017	151	713	864
2018	139	1022	1161
2019	277	962	1239
2020	81	1291	1372
2021	148	2342	2490
2022	63	1087	1150
2023	159	1531	1690
2024	63	1069	1132
2025	38	995	1033

Table 8: Cobia number of vessels by state contributing to landings estimates. Strata with less than 3 vessels reporting are considered confidential.

year	NC	GASC	NFL	SFL
1981	5	0	11	28
1982	3	4	9	25
1983	3	5	13	29
1984	2	9	13	23
1985	4	9	17	21
1986	4	13	17	31
1987	4	9	19	26
1988	5	8	15	24
1989	5	7	14	24
1990	5	9	10	21
1991	8	12	7	20
1992	7	15	18	36
1993	5	11	15	37
1994	6	14	15	35
1995	6	14	16	33
1996	7	14	18	26
1997	7	14	15	29
1998	5	19	15	26
1999	4	11	14	14
2000	5	14	13	16
2001	4	16	13	12
2002	4	14	10	14
2003	3	11	10	9
2004	7	14	12	10
2005	6	12	11	14
2006	4	15	11	11
2007	4	16	13	12
2008	7	21	16	23
2009	3	18	16	26
2010	4	16	15	23
2011	5	16	12	22
2012	5	21	13	22
2013	7	18	12	26
2014	8	20	12	28
2015	6	17	11	27
2016	6	17	11	25
2017	6	13	9	25
2018	5	13	10	24
2019	3	14	9	20
2020	3	13	9	21
2021	4	12	9	19
2022	2	10	8	16
2023	5	12	7	18
2024	4	11	7	21
2025	4	12	6	23

Table 9: Cobia number of vessels by region contributing to landings estimates. Strata with less than 3 vessels reporting are considered confidential.

year	North	South
1981	5	39
1982	7	34
1983	8	42
1984	11	35
1985	13	38
1986	17	48
1987	13	45
1988	13	39
1989	12	38
1990	14	31
1991	20	27
1992	22	54
1993	16	52
1994	20	50
1995	20	49
1996	21	44
1997	21	44
1998	24	41
1999	15	28
2000	19	29
2001	20	25
2002	18	24
2003	14	19
2004	21	22
2005	18	25
2006	19	22
2007	20	25
2008	28	39
2009	21	42
2010	20	38
2011	21	34
2012	26	35
2013	25	38
2014	28	40
2015	23	38
2016	23	36
2017	19	34
2018	18	34
2019	17	29
2020	16	30
2021	16	28
2022	12	24
2023	17	25
2024	15	28
2025	16	29

Table 10: Cobia number of vessels annually contributing to landings estimates. Strata with less than 3 vessels reporting are considered confidential.

year	n_vessel
1981	44
1982	41
1983	50
1984	46
1985	51
1986	65
1987	58
1988	52
1989	50
1990	45
1991	47
1992	76
1993	68
1994	70
1995	69
1996	65
1997	65
1998	65
1999	43
2000	48
2001	45
2002	42
2003	33
2004	43
2005	43
2006	41
2007	45
2008	67
2009	63
2010	58
2011	55
2012	61
2013	63
2014	68
2015	61
2016	59
2017	53
2018	52
2019	46
2020	46
2021	44
2022	36
2023	42
2024	43
2025	45

Table 11: Unweighted proxy CV values by state. These values are based on logbook reporting compliance and are consistent across species.

year	NC	GASC	NFL	SFL
1981	0.514	0.204	0.485	0.250
1982	0.344	0.124	0.469	0.491
1983	0.337	0.097	0.414	0.380
1984	0.611	0.230	0.508	0.611
1985	0.619	0.226	0.535	0.603
1986	0.640	0.145	0.400	0.531
1987	0.579	0.186	0.356	0.549
1988	0.608	0.225	0.438	0.596
1989	0.869	0.275	0.501	0.632
1990	0.826	0.245	0.583	0.616
1991	0.663	0.339	0.604	0.650
1992	0.335	0.156	0.204	0.445
1993	0.474	0.077	0.146	0.397
1994	0.393	0.112	0.216	0.538
1995	0.401	0.109	0.185	0.514
1996	0.359	0.060	0.161	0.724
1997	0.425	0.093	0.143	0.538
1998	0.431	0.087	0.079	0.581
1999	0.458	0.096	0.097	0.754
2000	0.459	0.057	0.244	0.783
2001	0.478	0.088	0.145	0.776
2002	0.588	0.066	0.091	0.843
2003	0.425	0.152	0.085	0.855
2004	0.300	0.086	0.067	0.864
2005	0.542	0.054	0.129	0.850
2006	0.499	0.255	0.083	0.859
2007	0.540	0.208	0.206	0.771
2008	0.101	0.210	0.092	0.300
2009	0.175	0.161	0.176	0.096
2010	0.076	0.168	0.054	0.084
2011	0.112	0.107	0.019	0.089
2012	0.116	0.083	0.051	0.129
2013	0.072	0.079	0.050	0.134
2014	0.076	0.055	0.051	0.053
2015	0.050	0.054	0.054	0.068
2016	0.055	0.059	0.052	0.221
2017	0.051	0.056	0.057	0.060
2018	0.057	0.059	0.054	0.059
2019	0.052	0.060	0.071	0.055
2020	0.050	0.050	0.050	0.058
2021	0.050	0.050	0.050	0.050
2022	0.050	0.050	0.052	0.108
2023	0.050	0.051	0.051	0.070
2024	0.050	0.051	0.050	0.065
2025	0.059	0.053	0.050	0.071

Table 12: Unweighted proxy CV values by region. These values are based on logbook reporting compliance and are consistent across species.

year	North	South
1981	0.268	0.278
1982	0.171	0.489
1983	0.151	0.385
1984	0.318	0.595
1985	0.317	0.592
1986	0.258	0.507
1987	0.272	0.514
1988	0.326	0.565
1989	0.456	0.610
1990	0.441	0.611
1991	0.434	0.643
1992	0.210	0.400
1993	0.196	0.350
1994	0.189	0.487
1995	0.189	0.466
1996	0.155	0.655
1997	0.190	0.472
1998	0.187	0.492
1999	0.210	0.642
2000	0.176	0.696
2001	0.206	0.676
2002	0.239	0.729
2003	0.255	0.718
2004	0.147	0.752
2005	0.239	0.754
2006	0.317	0.750
2007	0.284	0.663
2008	0.190	0.250
2009	0.164	0.119
2010	0.149	0.077
2011	0.108	0.073
2012	0.090	0.114
2013	0.077	0.120
2014	0.060	0.053
2015	0.053	0.066
2016	0.058	0.201
2017	0.055	0.059
2018	0.059	0.058
2019	0.059	0.058
2020	0.050	0.057
2021	0.050	0.050
2022	0.050	0.099
2023	0.051	0.068
2024	0.051	0.064
2025	0.054	0.068

Table 13: Unweighted proxy CV values by year. These values are based on logbook reporting compliance and are consistent across species.

year	cv
1981	0.277
1982	0.450
1983	0.358
1984	0.557
1985	0.553
1986	0.472
1987	0.478
1988	0.527
1989	0.590
1990	0.589
1991	0.614
1992	0.372
1993	0.324
1994	0.442
1995	0.419
1996	0.579
1997	0.408
1998	0.416
1999	0.556
2000	0.589
2001	0.571
2002	0.615
2003	0.631
2004	0.620
2005	0.652
2006	0.650
2007	0.560
2008	0.233
2009	0.133
2010	0.100
2011	0.085
2012	0.107
2013	0.110
2014	0.054
2015	0.064
2016	0.170
2017	0.058
2018	0.058
2019	0.058
2020	0.054
2021	0.050
2022	0.085
2023	0.063
2024	0.060
2025	0.064

Table 14: Regional proxy CV values weighted by state landings of cobia in number.

year	North	South
1981	0.514	0.342
1982	0.287	0.481
1983	0.282	0.397
1984	0.471	0.545
1985	0.357	0.560
1986	0.388	0.443
1987	0.307	0.446
1988	0.417	0.495
1989	0.590	0.559
1990	0.686	0.599
1991	0.520	0.618
1992	0.275	0.282
1993	0.277	0.245
1994	0.282	0.359
1995	0.272	0.343
1996	0.172	0.433
1997	0.192	0.261
1998	0.157	0.267
1999	0.204	0.356
2000	0.185	0.435
2001	0.235	0.274
2002	0.210	0.336
2003	0.264	0.232
2004	0.171	0.213
2005	0.275	0.627
2006	0.327	0.208
2007	0.225	0.426
2008	0.195	0.139
2009	0.162	0.150
2010	0.155	0.071
2011	0.108	0.050
2012	0.089	0.099
2013	0.077	0.100
2014	0.062	0.053
2015	0.053	0.061
2016	0.058	0.127
2017	0.051	0.058
2018	0.059	0.056
2019	0.060	0.062
2020	0.050	0.052
2021	0.050	0.050
2022	0.050	0.069
2023	0.051	0.056
2024	0.051	0.057
2025	0.054	0.059

Table 15: Regional proxy CV values weighted by state landings of cobia in weight.

year	North	South
1981	0.514	0.332
1982	0.287	0.481
1983	0.301	0.400
1984	0.471	0.545
1985	0.357	0.558
1986	0.405	0.440
1987	0.307	0.425
1988	0.426	0.497
1989	0.578	0.557
1990	0.692	0.599
1991	0.518	0.621
1992	0.275	0.279
1993	0.265	0.243
1994	0.282	0.366
1995	0.272	0.344
1996	0.173	0.433
1997	0.192	0.260
1998	0.159	0.248
1999	0.202	0.359
2000	0.185	0.448
2001	0.231	0.260
2002	0.213	0.326
2003	0.264	0.244
2004	0.172	0.193
2005	0.274	0.618
2006	0.327	0.229
2007	0.225	0.440
2008	0.198	0.131
2009	0.162	0.154
2010	0.155	0.068
2011	0.108	0.048
2012	0.089	0.101
2013	0.077	0.096
2014	0.062	0.053
2015	0.053	0.060
2016	0.058	0.131
2017	0.051	0.058
2018	0.059	0.056
2019	0.060	0.062
2020	0.050	0.052
2021	0.050	0.050
2022	0.050	0.065
2023	0.051	0.055
2024	0.051	0.057
2025	0.054	0.058

Table 16: Annual proxy CV values weighted by regional landings of cobia in number.

year	cv
1981	0.352
1982	0.476
1983	0.393
1984	0.543
1985	0.554
1986	0.439
1987	0.437
1988	0.489
1989	0.561
1990	0.608
1991	0.606
1992	0.281
1993	0.247
1994	0.349
1995	0.330
1996	0.408
1997	0.245
1998	0.245
1999	0.337
2000	0.391
2001	0.267
2002	0.311
2003	0.236
2004	0.203
2005	0.592
2006	0.224
2007	0.366
2008	0.148
2009	0.151
2010	0.077
2011	0.056
2012	0.098
2013	0.096
2014	0.054
2015	0.060
2016	0.122
2017	0.058
2018	0.056
2019	0.061
2020	0.052
2021	0.050
2022	0.068
2023	0.055
2024	0.056
2025	0.057

Table 17: Annual proxy CV values weighted by regional landings of cobia in weight.

year	cv
1981	0.342
1982	0.477
1983	0.396
1984	0.541
1985	0.551
1986	0.438
1987	0.420
1988	0.492
1989	0.558
1990	0.608
1991	0.608
1992	0.278
1993	0.245
1994	0.356
1995	0.331
1996	0.406
1997	0.242
1998	0.230
1999	0.340
2000	0.403
2001	0.255
2002	0.301
2003	0.247
2004	0.187
2005	0.579
2006	0.241
2007	0.382
2008	0.144
2009	0.155
2010	0.075
2011	0.052
2012	0.100
2013	0.092
2014	0.054
2015	0.059
2016	0.126
2017	0.058
2018	0.056
2019	0.062
2020	0.052
2021	0.050
2022	0.064
2023	0.054
2024	0.056
2025	0.056

Table 18: Estimates of total effort in angler - days by year.

year	Angler_Day
1981	377287
1982	387611
1983	367426
1984	385173
1985	378230
1986	415472
1987	447108
1988	420664
1989	418250
1990	423286
1991	388940
1992	367489
1993	344216
1994	342703
1995	312748
1996	289928
1997	270612
1998	254082
1999	251147
2000	253891
2001	244433
2002	221614
2003	204565
2004	251418
2005	238448
2006	257332
2007	246881
2008	188388
2009	196807
2010	189684
2011	195594
2012	209468
2013	227189
2014	260606
2015	257397
2016	260432
2017	183210
2018	174984
2019	176734
2020	132239
2021	187994
2022	159877
2023	157602
2024	154519

Table 19: Estimates of total effort in angler - trips by year.

year	Angler_Trip
1981	392582
1982	492606
1983	440260
1984	563371
1985	582528
1986	613712
1987	629483
1988	566307
1989	576728
1990	596940
1991	568273
1992	535684
1993	477228
1994	500888
1995	456566
1996	450294
1997	396328
1998	353996
1999	375614
2000	407464
2001	363548
2002	330485
2003	345052
2004	394327
2005	392750
2006	418666
2007	342733
2008	282792
2009	289305
2010	284911
2011	296076
2012	328779
2013	354212
2014	419735
2015	419994
2016	422312
2017	282424
2018	267083
2019	270187
2020	195841
2021	284343
2022	245006
2023	239811
2024	219186

Table 20: Estimates of total effort in angler - days by region.

year	North	South
1981	78404	298883
1982	94478	293133
1983	89563	277863
1984	96179	288994
1985	97385	280845
1986	98414	317058
1987	114067	333041
1988	118889	301775
1989	101386	316864
1990	100391	322895
1991	108918	280022
1992	102966	264523
1993	107243	236973
1994	100407	242296
1995	105248	207500
1996	92755	197173
1997	100245	170367
1998	100743	153339
1999	88952	162195
2000	73794	180097
2001	83381	161052
2002	72340	149274
2003	60980	143585
2004	77717	173701
2005	67370	171078
2006	83728	173604
2007	91697	155184
2008	66019	122369
2009	62478	134329
2010	67979	121705
2011	64667	130927
2012	62830	146638
2013	63400	163789
2014	66783	193823
2015	64195	193202
2016	65519	194913
2017	58825	124385
2018	56105	118879
2019	58092	118642
2020	49140	83099
2021	68335	119659
2022	55445	104432
2023	52457	105145
2024	45557	108962

Table 21: Estimates of total effort in angler - trips by region.

year	North	South
1981	107488	285093
1982	123667	368939
1983	118586	321674
1984	130272	433099
1985	136083	446445
1986	134900	478813
1987	153645	475837
1988	159859	406448
1989	129663	447065
1990	126632	470308
1991	141884	426389
1992	134484	401200
1993	139959	337269
1994	127967	372921
1995	130772	325793
1996	116642	333651
1997	124617	271712
1998	127804	226192
1999	113997	261617
2000	119864	287601
2001	110191	253357
2002	106457	224028
2003	101911	243141
2004	109290	285037
2005	98676	294074
2006	124258	294408
2007	124941	217792
2008	97386	185406
2009	92891	196414
2010	100784	184128
2011	97154	198922
2012	96808	231971
2013	94481	259732
2014	97929	321806
2015	94124	325870
2016	98309	324003
2017	85084	197340
2018	82297	184786
2019	85730	184457
2020	71483	124358
2021	102793	181550
2022	83258	161748
2023	76513	163298
2024	64632	154554

Table 22: Estimates of total effort in angler - days by state.

year	NC	GASC	NFL	SFL
1981	19374	59030	72427	226456
1982	26939	67539	66961	226172
1983	23830	65733	83499	194364
1984	28865	67314	95234	193760
1985	31384	66001	94449	186396
1986	31187	67227	113101	203957
1987	35261	78806	114144	218897
1988	42421	76468	109156	192619
1989	38678	62708	102920	213944
1990	43240	57151	98234	224661
1991	40936	67982	85111	194911
1992	41176	61790	90810	173713
1993	42786	64457	74494	162479
1994	36691	63716	65260	177036
1995	40295	64953	55892	151608
1996	35142	57613	44555	152618
1997	37189	63056	49858	120509
1998	37399	63344	49788	103551
1999	31596	57356	55153	107042
2000	31351	42443	57619	122478
2001	31779	51602	53460	107592
2002	27601	44739	46639	102635
2003	22998	37982	51369	92216
2004	27255	50462	50544	123157
2005	31573	35797	47778	123300
2006	25736	57992	46990	126614
2007	29002	62695	51796	103388
2008	17158	48861	50771	71598
2009	19468	43010	64356	69973
2010	21071	46908	51719	69986
2011	18457	46210	53142	77785
2012	20766	42064	57840	88798
2013	20547	42853	64697	99092
2014	22691	44092	58685	135138
2015	22716	41479	52703	140499
2016	21565	43954	51640	143273
2017	20170	38655	46563	77822
2018	16813	39292	41905	76974
2019	15552	42540	42069	76573
2020	14154	34986	29844	53255
2021	19719	48616	46688	72971
2022	16140	39305	33405	71027
2023	16115	36342	31314	73831
2024	12654	32903	28099	80863

Table 23: Estimates of total effort in angler - trips by state.

year	NC	GASC	NFL	SFL
1981	23236	84252	83851	201243
1982	30016	93651	80231	288708
1983	26254	92332	86734	234940
1984	28101	102171	108836	324262
1985	30138	105945	117459	328986
1986	31157	103743	132626	346186
1987	31967	121679	121517	354321
1988	38650	121209	112748	293699
1989	32154	97509	119207	327858
1990	36733	89899	127075	343233
1991	39724	102160	111168	315222
1992	40004	94480	113529	287671
1993	44312	95647	86316	250953
1994	33949	94018	76507	296414
1995	37666	93106	66313	259480
1996	37243	79399	53770	279882
1997	36906	87710	61377	210335
1998	40456	87348	58562	167631
1999	36054	77943	66515	195102
2000	38531	81332	67873	219728
2001	36618	73573	65784	187573
2002	38772	67685	55869	168159
2003	32010	69901	64298	178843
2004	35808	73482	62178	222859
2005	41262	57414	59824	234251
2006	33776	90482	58762	235646
2007	33576	91365	63331	154462
2008	19948	77438	62540	122866
2009	21675	71216	75603	120812
2010	24330	76453	60951	123176
2011	21976	75179	64173	134748
2012	24233	72575	75883	156087
2013	23139	71342	80506	179226
2014	24838	73091	72971	248835
2015	26233	67891	67461	258409
2016	24808	73501	66229	257773
2017	23349	61735	59924	137416
2018	18752	63544	52768	132018
2019	17401	68329	52767	131689
2020	15225	56258	36247	88111
2021	22098	80695	59093	122457
2022	18482	64776	41530	120218
2023	18210	58303	37991	125307
2024	14390	50242	33574	120980

Table 24: Cobia number of fish lengths sampled by state.

year	NC	GASC	NFL	SFL
1974		3		
1978	1			
1979	2		13	9
1980	1		5	10
1981	1		21	9
1982	2		24	4
1983	4		6	14
1984	3	2	19	20
1985	5	1	13	4
1986	4	3	16	14
1987	6	4	6	27
1988	2	5	10	24
1989	5	2	13	16
1990	3	6	32	7
1991	5	7	22	3
1992	9	1	48	4
1993	4	9	43	10
1994		9	10	11
1995	5	8	16	
1996	3	4	10	
1997	5	4	15	3
1998	3	5	13	17
1999	1	1	20	6
2000		1	9	9
2001	6		21	12
2002	5	1	35	12
2003	2	1	33	10
2004	4		18	13
2005	4		2	12
2006	2	2	27	15
2007		7	14	15
2008	2	1	16	10
2009		1	25	5
2010	1	7	30	20
2011	1	1	33	13
2012		4	37	25
2013	3	5	53	31
2014	7	13	57	29
2015		2	40	32
2016	1	3	64	17
2017	1		46	12
2018		12	22	8
2019		6	56	6
2020			13	
2022		1	16	3
2023		9	14	5
2024		2	15	11
2025	1	2	8	6

Table 25: Cobia number of fish lengths sampled by region.

year	North	South
1974	3	
1978	1	
1979	2	22
1980	1	15
1981	1	30
1982	2	28
1983	4	20
1984	5	39
1985	6	17
1986	7	30
1987	10	33
1988	7	34
1989	7	29
1990	9	39
1991	12	25
1992	10	52
1993	13	53
1994	9	21
1995	13	16
1996	7	10
1997	9	18
1998	8	30
1999	2	26
2000	1	18
2001	6	33
2002	6	47
2003	3	43
2004	4	31
2005	4	14
2006	4	42
2007	7	29
2008	3	26
2009	1	30
2010	8	50
2011	2	46
2012	4	62
2013	8	84
2014	20	86
2015	2	72
2016	4	81
2017	1	58
2018	12	30
2019	6	62
2020		13
2022	1	19
2023	9	19
2024	2	26
2025	3	14

Table 26: Cobia number of trips sampled by state.

year	NC	GASC	NFL	SFL
1974		3		
1978	1			
1979	2		11	8
1980	1		5	10
1981	1		18	9
1982	2		21	3
1983	4		6	13
1984	3	2	18	17
1985	5	1	11	4
1986	4	3	16	11
1987	5	3	6	21
1988	2	5	6	18
1989	5	2	10	11
1990	1	6	26	6
1991	5	6	16	2
1992	7	1	29	4
1993	4	7	26	9
1994		7	10	9
1995	5	7	11	
1996	3	3	7	
1997	5	4	11	3
1998	3	5	11	13
1999	1	1	18	6
2000		1	6	9
2001	6		16	12
2002	4	1	24	12
2003	2	1	18	8
2004	3		9	11
2005	4		2	11
2006	2	2	14	12
2007		7	8	11
2008	2	1	10	9
2009		1	22	5
2010	1	5	22	9
2011	1	1	26	10
2012		2	28	15
2013	2	5	40	24
2014	5	8	46	19
2015		2	29	21
2016	1	3	42	13
2017	1		32	12
2018		7	12	6
2019		5	37	6
2020			10	
2022		1	13	3
2023		5	13	4
2024		2	10	9
2025	1	2	7	6

Table 27: Cobia number of trips sampled by region.

year	North	South
1974	3	
1978	1	
1979	2	19
1980	1	15
1981	1	27
1982	2	24
1983	4	19
1984	5	35
1985	6	15
1986	7	27
1987	8	27
1988	7	24
1989	7	21
1990	7	32
1991	11	18
1992	8	33
1993	11	35
1994	7	19
1995	12	11
1996	6	7
1997	9	14
1998	8	24
1999	2	24
2000	1	15
2001	6	28
2002	5	36
2003	3	26
2004	3	20
2005	4	13
2006	4	26
2007	7	19
2008	3	19
2009	1	27
2010	6	31
2011	2	36
2012	2	43
2013	7	64
2014	13	65
2015	2	50
2016	4	55
2017	1	44
2018	7	18
2019	5	43
2020		10
2022	1	16
2023	5	17
2024	2	19
2025	3	13

Table 28: Cobia mean total length in mm by state.

year	NC	GASC	NFL	SFL
1974		297		
1978	1067			
1979	1115		1006	934
1980	900		1081	896
1981	785		1041	1021
1982	898		957	1140
1983	1003		924	1011
1984	1085	1200	1048	932
1985	1049	1120	1018	723
1986	767	1002	1031	989
1987	665	1057	884	1090
1988	1100	1000	1036	1114
1989	1043	1118	1374	1092
1990	1115	968	1134	1083
1991	953	1045	1039	938
1992	977	915	1097	1005
1993	1028	1085	1063	1006
1994		1092	1070	1005
1995	1001	1114	1042	
1996	1523	1146	1281	
1997	1045	1102	1061	1018
1998	1149	1081	1144	1599
1999	1152	1090	1057	1294
2000		1068	1060	1004
2001	1084		1080	952
2002	1117	935	1053	1024
2003	1198	991	1049	1080
2004	1239		1116	1048
2005	1142		1148	982
2006	981	1220	1048	1089
2007		1088	935	1054
2008	957	1270	1039	1118
2009		1015	1036	1029
2010	1115	1097	1058	1058
2011	1120	1020	1109	1088
2012		798	1053	1061
2013	992	1088	1048	1051
2014	1086	1310	1097	1044
2015		946	1089	1024
2016	1372	1042	1062	1074
2017	1020		1095	973
2018		1102	1058	1011
2019		1079	1038	1029
2020			1064	
2022		967	1100	960
2023		1096	1145	1263
2024		1055	1077	1119
2025	1191	1097	1155	1134

Table 29: Cobia total length CV in mm by state.

year	NC	GASC	NFL	SFL
1974		0.04		
1978				
1979	0.00		0.22	0.23
1980			0.24	0.17
1981			0.27	0.10
1982	0.17		0.19	0.28
1983	0.08		0.09	0.27
1984	0.07	0.23	0.14	0.17
1985	0.18		0.15	0.39
1986	0.48	0.11	0.10	0.16
1987	0.76	0.14	0.13	0.14
1988	0.04	0.24	0.09	0.18
1989	0.07	0.10	1.05	0.10
1990	0.07	0.08	0.11	0.16
1991	0.11	0.14	0.09	0.01
1992	0.33		0.13	0.02
1993	0.05	0.13	0.10	0.04
1994		0.11	0.11	0.04
1995	0.11	0.12	0.19	
1996	0.35	0.06	0.19	
1997	0.11	0.08	0.09	0.20
1998	0.16	0.16	0.09	1.33
1999			0.12	0.20
2000			0.09	0.12
2001	0.11		0.12	0.32
2002	0.13		0.09	0.08
2003	0.11		0.11	0.10
2004	0.06		0.08	0.08
2005	0.13		0.16	0.12
2006	0.06	0.20	0.17	0.15
2007		0.09	0.23	0.18
2008	0.07		0.14	0.12
2009			0.12	0.16
2010		0.08	0.12	0.16
2011			0.12	0.14
2012		0.81	0.14	0.11
2013	0.02	0.15	0.15	0.12
2014	0.16	0.13	0.14	0.08
2015		0.14	0.14	0.13
2016		0.02	0.09	0.17
2017			0.12	0.07
2018		0.08	0.10	0.09
2019		0.12	0.10	0.11
2020			0.11	
2022			0.09	0.03
2023		0.07	0.10	0.26
2024		0.10	0.09	0.12
2025		0.14	0.14	0.16

Table 30: Cobia mean weight (g) by state.

year	NC	GASC	NFL	SFL
1974		242		
1978	9517			
1979	12346		11553	8262
1980	5964		7237	5866
1981	4250		8259	9282
1982	5250		7798	7650
1983	8806		6600	7880
1984	10473	14950	9118	7130
1985	9892	12600	9185	3388
1986	4476	8267	8617	7621
1987	5946	9800	5963	9620
1988	10505	9192	9125	8968
1989	8964	13330	10545	9548
1990	10823	8536	12957	11615
1991	6690	10165	7989	5647
1992	10730	8370	10955	8343
1993	9505	9977	8970	8895
1994		8703	9532	10965
1995	8694	9489	10091	
1996	13740	11770	13191	
1997	8926	10462	10587	8293
1998	11253	11096	12229	10282
1999	12550	10390	9166	10972
2000		10060	9552	9262
2001	10738		10460	8960
2002	12330	7740	9253	8179
2003	14065	5660	8858	9688
2004	16255		11867	9891
2005	10366		11775	7674
2006	7520	9890	9555	10522
2007		9346	8245	10037
2008	9860	16780	10224	10500
2009		5910	8874	8902
2010	11160	9561	9523	9396
2011	10320	5520	11142	12798
2012		7930	9722	10287
2013	8987	11352	9587	10077
2014	11234	18309	9969	9622
2015		8060	8674	9648
2016	21364	8477	8485	10614
2017	7870		9975	7624
2018		10268	8528	8335
2019		9410	8386	9790
2020			8479	
2022		7200	10100	6893
2023		9879	11877	10562
2024		7855	9064	10928
2025	13970	11375	12942	11960

Table 31: Cobia weight CV in g by state.

year	NC	GASC	NFL	SFL
1974		0.11		
1978				
1979	0.07		0.33	0.80
1980			0.78	0.50
1981			0.58	0.52
1982	0.42		0.60	0.22
1983	0.33		0.39	0.67
1984	0.26	0.77	0.41	0.50
1985	0.54		0.52	0.58
1986	0.65	0.39	0.39	0.57
1987	1.10	0.39	0.29	0.40
1988	0.05	0.68	0.27	0.32
1989	0.25	0.10	0.47	0.37
1990	0.30	0.32	0.45	0.64
1991	0.39	0.29	0.30	0.16
1992	0.42		0.49	0.68
1993	0.29	0.41	0.30	0.26
1994		0.37	0.27	0.44
1995	0.20	0.36	0.46	
1996	0.11	0.05	0.31	
1997	0.27	0.23	0.58	0.49
1998	0.42	0.50	0.36	0.31
1999			0.46	0.35
2000			0.34	0.38
2001	0.35		0.36	0.31
2002	0.35		0.34	0.26
2003	0.36		0.32	0.33
2004	0.22		0.22	0.26
2005	0.34		0.32	0.47
2006	0.28	0.27	0.31	0.50
2007		0.35	0.15	0.61
2008	0.04		0.44	0.28
2009			0.38	0.64
2010		0.24	0.37	0.50
2011			0.35	0.34
2012		1.13	0.43	0.32
2013	0.09	0.60	0.50	0.45
2014	0.48	0.37	0.42	0.32
2015		0.04	0.41	0.48
2016		0.18	0.31	0.32
2017			0.38	0.47
2018		0.27	0.41	0.55
2019		0.41	0.32	0.56
2020			0.36	
2022			0.32	0.21
2023		0.19	0.41	0.17
2024		0.12	0.32	0.39
2025		0.38	0.49	0.54

Table 32: Cobia mean total length in mm by region.

year	North	South
1974	297	
1978	1067	
1979	1115	976
1980	900	958
1981	785	1035
1982	898	983
1983	1003	985
1984	1131	988
1985	1061	949
1986	868	1011
1987	822	1053
1988	1028	1091
1989	1064	1219
1990	1017	1125
1991	1006	1027
1992	971	1090
1993	1067	1052
1994	1092	1035
1995	1070	1042
1996	1307	1281
1997	1070	1054
1998	1106	1402
1999	1121	1112
2000	1068	1032
2001	1084	1033
2002	1087	1045
2003	1129	1056
2004	1239	1088
2005	1142	1006
2006	1100	1063
2007	1088	996
2008	1061	1069
2009	1015	1035
2010	1099	1058
2011	1070	1103
2012	798	1056
2013	1052	1049
2014	1232	1079
2015	946	1060
2016	1124	1065
2017	1020	1070
2018	1102	1045
2019	1079	1037
2020		1064
2022	967	1078
2023	1096	1176
2024	1055	1095
2025	1128	1146

Table 33: Cobia total length CV in mm by region.

year	North	South
1974	0.04	
1978		
1979	0.00	0.22
1980		0.21
1981		0.23
1982	0.17	0.22
1983	0.08	0.23
1984	0.14	0.17
1985	0.16	0.23
1986	0.34	0.13
1987	0.53	0.16
1988	0.20	0.16
1989	0.08	0.78
1990	0.10	0.12
1991	0.13	0.09
1992	0.31	0.12
1993	0.11	0.10
1994	0.11	0.08
1995	0.12	0.19
1996	0.28	0.19
1997	0.09	0.11
1998	0.15	1.14
1999	0.04	0.17
2000		0.11
2001	0.11	0.21
2002	0.13	0.08
2003	0.13	0.11
2004	0.06	0.08
2005	0.13	0.13
2006	0.18	0.16
2007	0.09	0.21
2008	0.18	0.13
2009		0.13
2010	0.07	0.13
2011	0.07	0.12
2012	0.81	0.13
2013	0.13	0.14
2014	0.16	0.12
2015	0.14	0.14
2016	0.15	0.11
2017		0.12
2018	0.08	0.10
2019	0.12	0.10
2020		0.11
2022		0.10
2023	0.07	0.16
2024	0.10	0.10
2025	0.11	0.14

Table 34: Cobia mean weight (g) by region.

year	North	South
1974	242	
1978	9517	
1979	12346	10143
1980	5964	6356
1981	4250	8577
1982	5250	7776
1983	8806	7476
1984	12264	8099
1985	10344	7821
1986	6101	8136
1987	7487	8889
1988	9567	9021
1989	10211	9995
1990	9394	12733
1991	8585	7550
1992	10494	10717
1993	9832	8951
1994	8703	10282
1995	9183	10091
1996	12755	13191
1997	9609	10204
1998	11155	11088
1999	11470	9583
2000	10060	9416
2001	10738	9944
2002	11565	8973
2003	11263	9055
2004	16255	11038
2005	10366	8260
2006	8705	9901
2007	9346	9172
2008	12167	10339
2009	5910	8879
2010	9761	9472
2011	7920	11556
2012	7930	9938
2013	10465	9762
2014	15703	9871
2015	8060	9121
2016	11698	8886
2017	7870	9626
2018	10268	8475
2019	9410	8526
2020		8479
2022	7200	9594
2023	9879	11531
2024	7855	9875
2025	12240	12521

Table 35: Cobia weight CV in g by region.

year	North	South
1974	0.11	
1978		
1979	0.07	0.52
1980		0.62
1981		0.56
1982	0.42	0.56
1983	0.33	0.61
1984	0.53	0.46
1985	0.48	0.63
1986	0.56	0.47
1987	0.76	0.43
1988	0.54	0.30
1989	0.28	0.42
1990	0.31	0.47
1991	0.37	0.31
1992	0.41	0.50
1993	0.37	0.28
1994	0.37	0.38
1995	0.31	0.46
1996	0.11	0.31
1997	0.25	0.57
1998	0.44	0.34
1999	0.13	0.43
2000		0.35
2001	0.35	0.35
2002	0.37	0.33
2003	0.53	0.32
2004	0.22	0.25
2005	0.34	0.46
2006	0.27	0.40
2007	0.35	0.49
2008	0.33	0.37
2009		0.42
2010	0.23	0.42
2011	0.43	0.35
2012	1.13	0.38
2013	0.50	0.48
2014	0.45	0.40
2015	0.04	0.45
2016	0.56	0.32
2017		0.40
2018	0.27	0.44
2019	0.41	0.35
2020		0.36
2022		0.34
2023	0.19	0.37
2024	0.12	0.37
2025	0.28	0.49

5 Figures

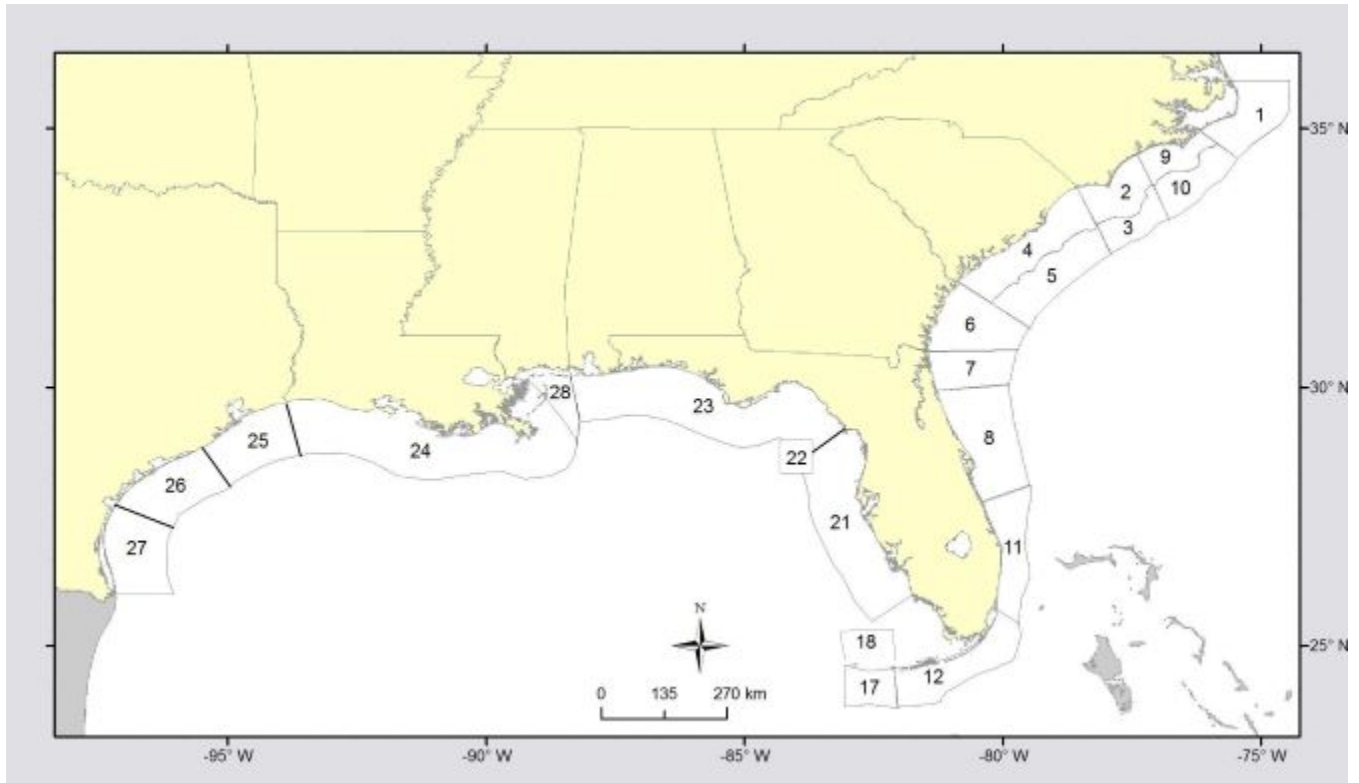


Figure 1: Headboat sampling areas prior to 2013.

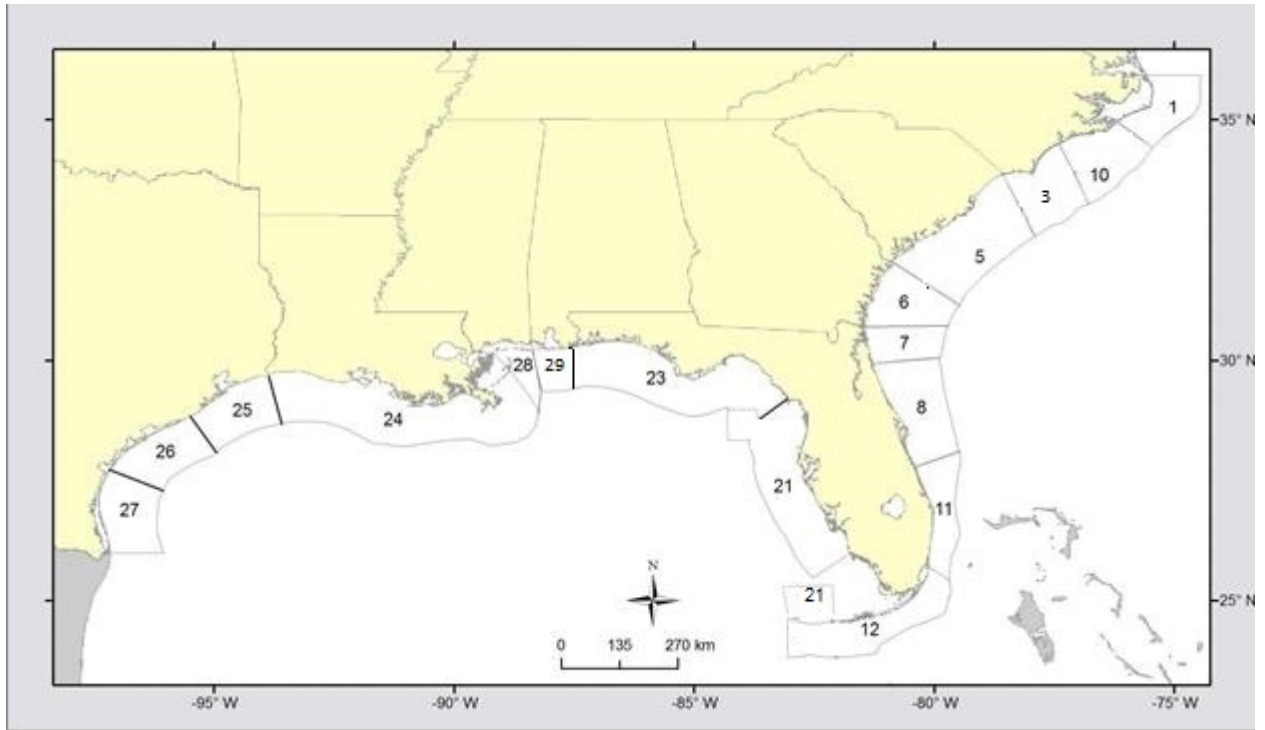


Figure 2: Headboat sampling areas 2013 - present.

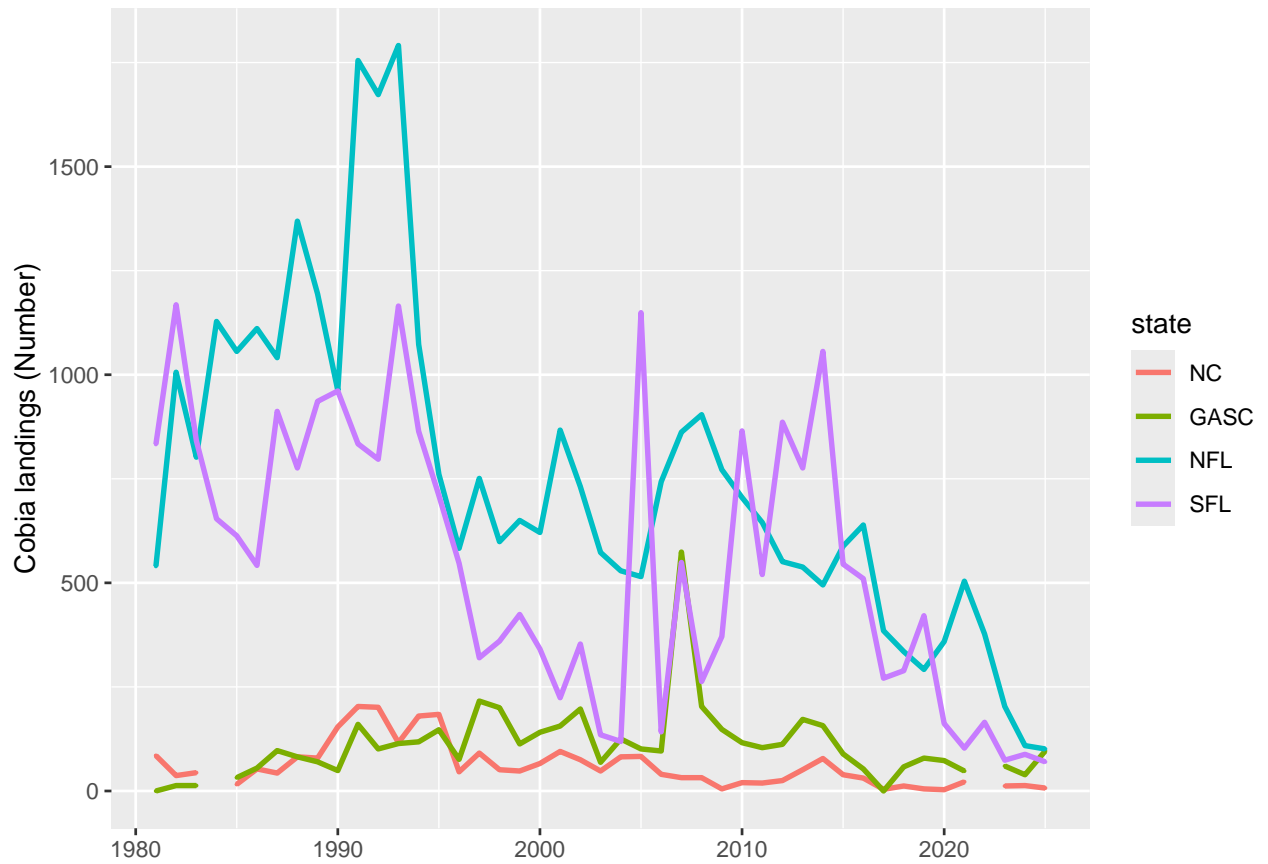


Figure 3: Cobia landings in number. The NC and GASC landings are confidential for 1984 and 2022 but similar to adjacent years.

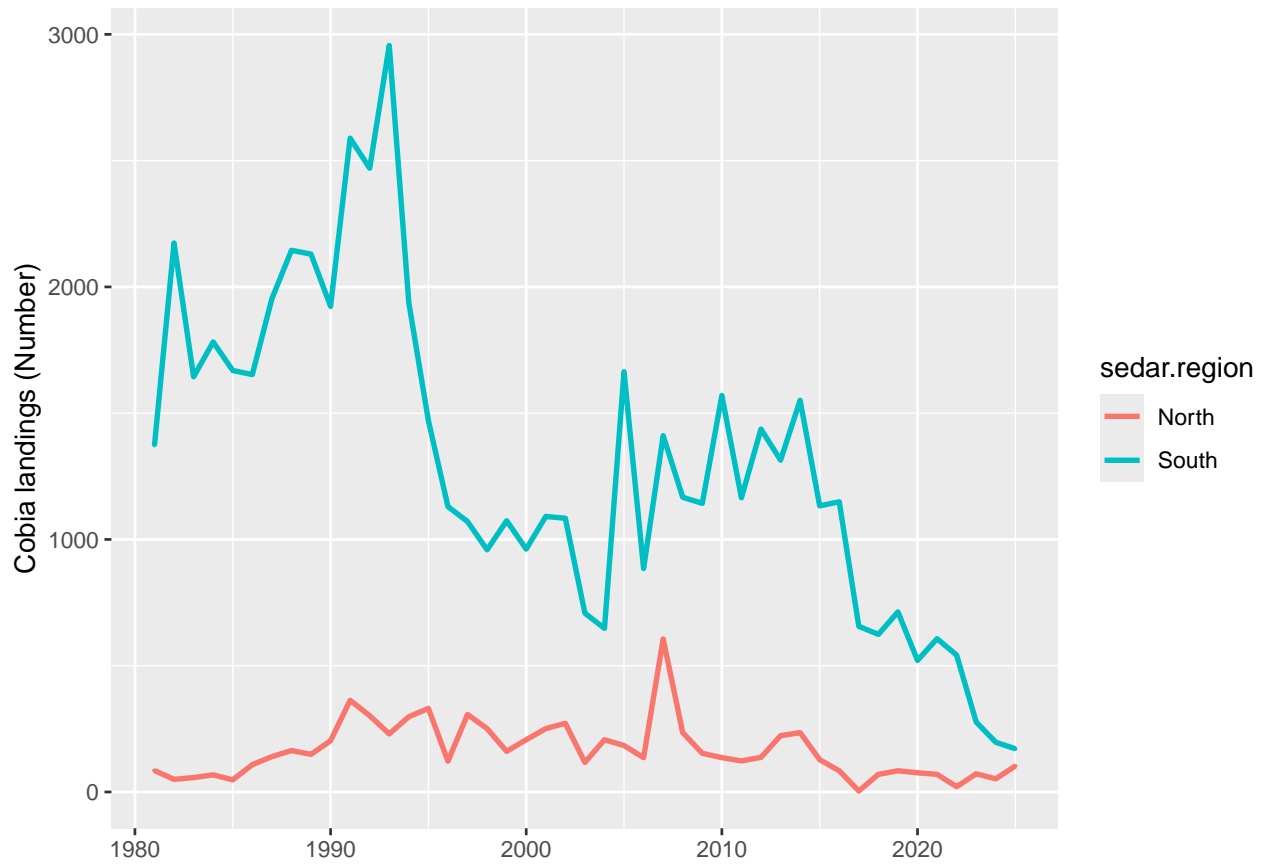


Figure 4: Cobia landings in number by region. The north region represents the stock boundary defined in SEDAR 58.

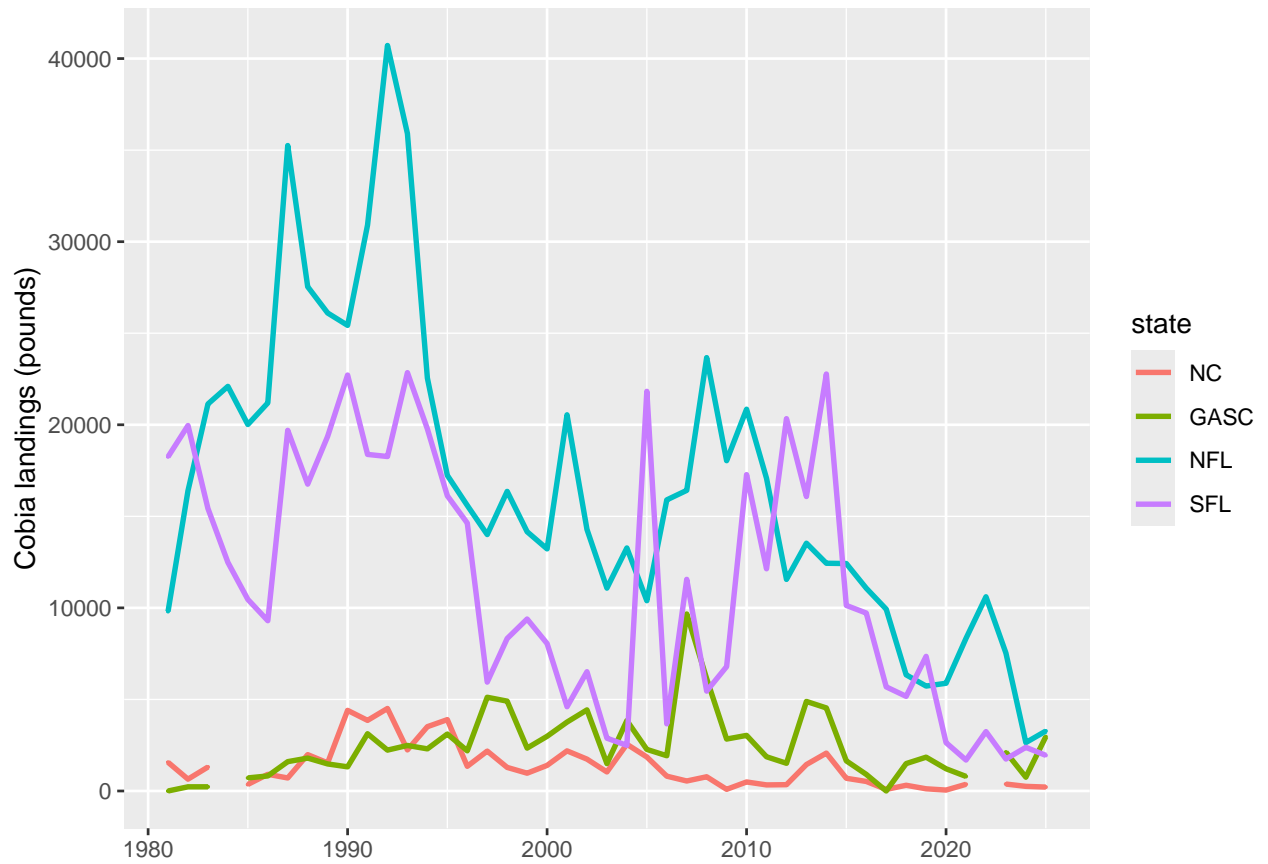


Figure 5: Cobia landings in pounds. The NC and GASC landings are confidential for 1984 and 2022 but similar to adjacent years.

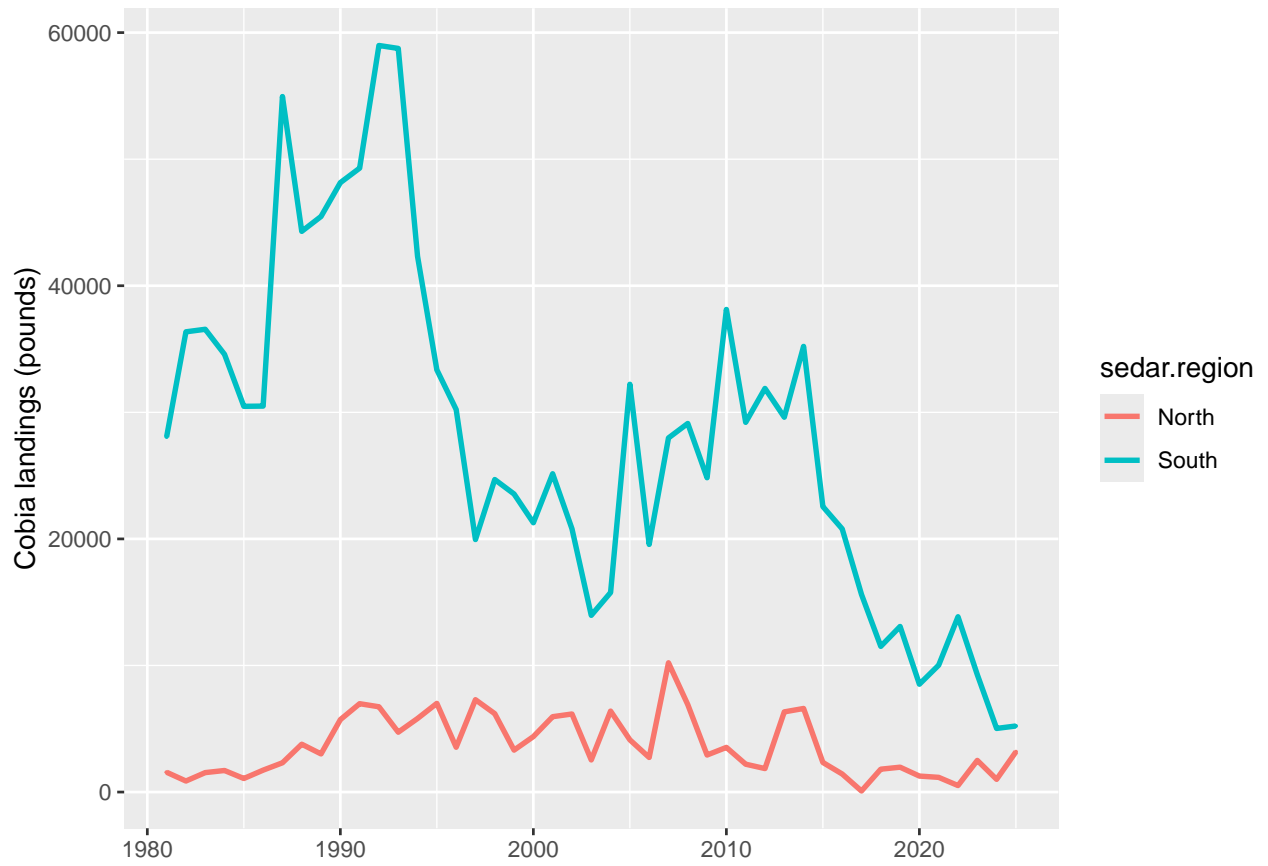


Figure 6: Cobia landings in pounds by region. The north region represents the stock boundary defined in SEDAR 58.

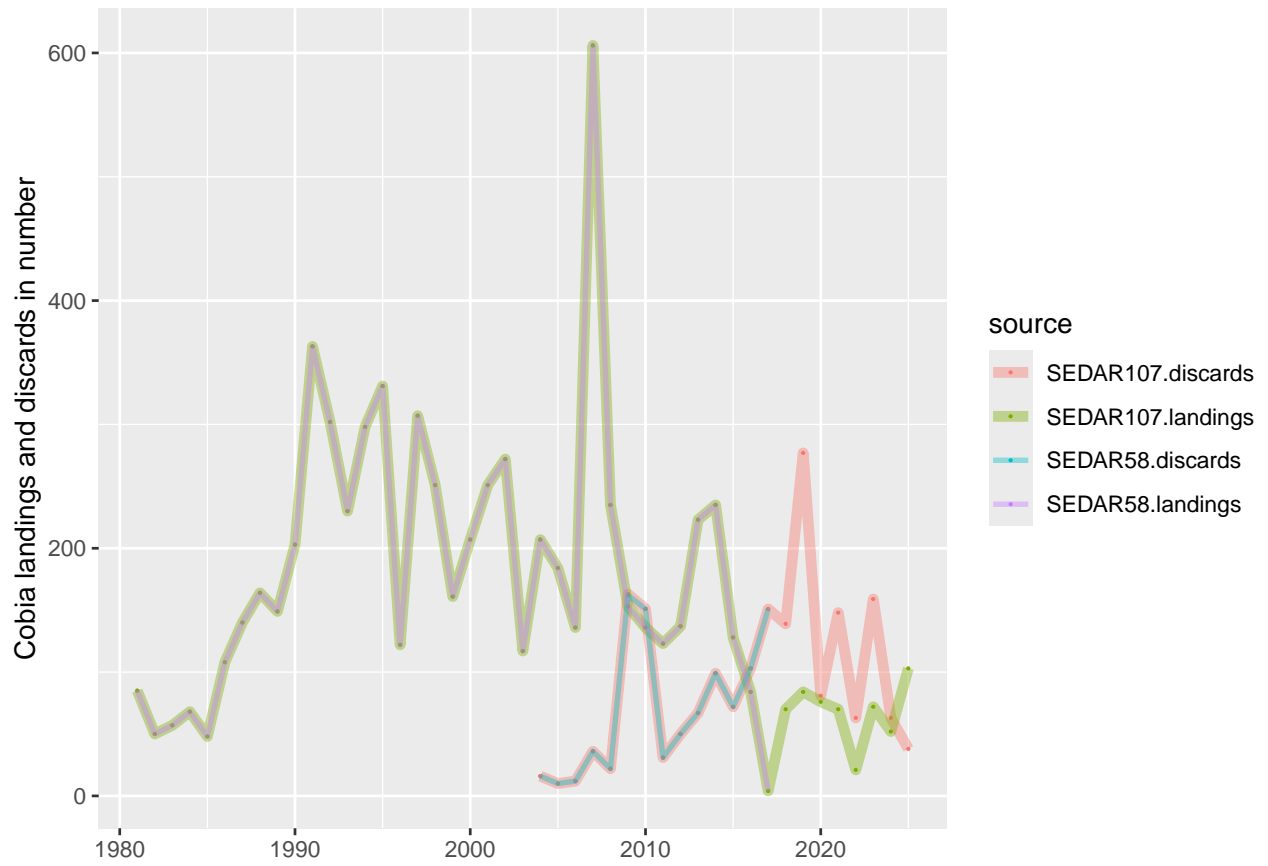


Figure 7: Comparison of Cobia SEDAR 107 North region to SEDAR 58 landings and discards.

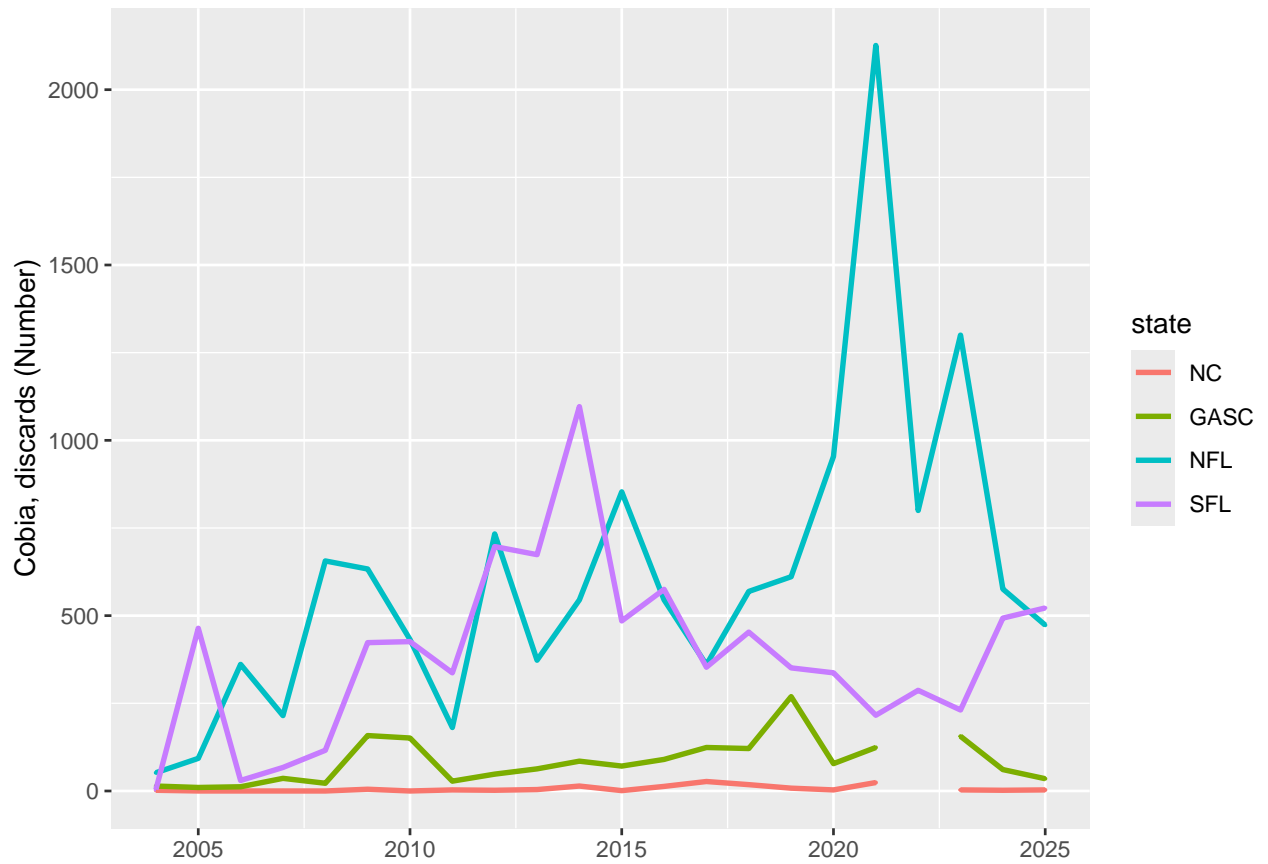


Figure 8: Cobia discards in number. The NC and GASC landings for 2022 are confidential but similar to adjacent years.

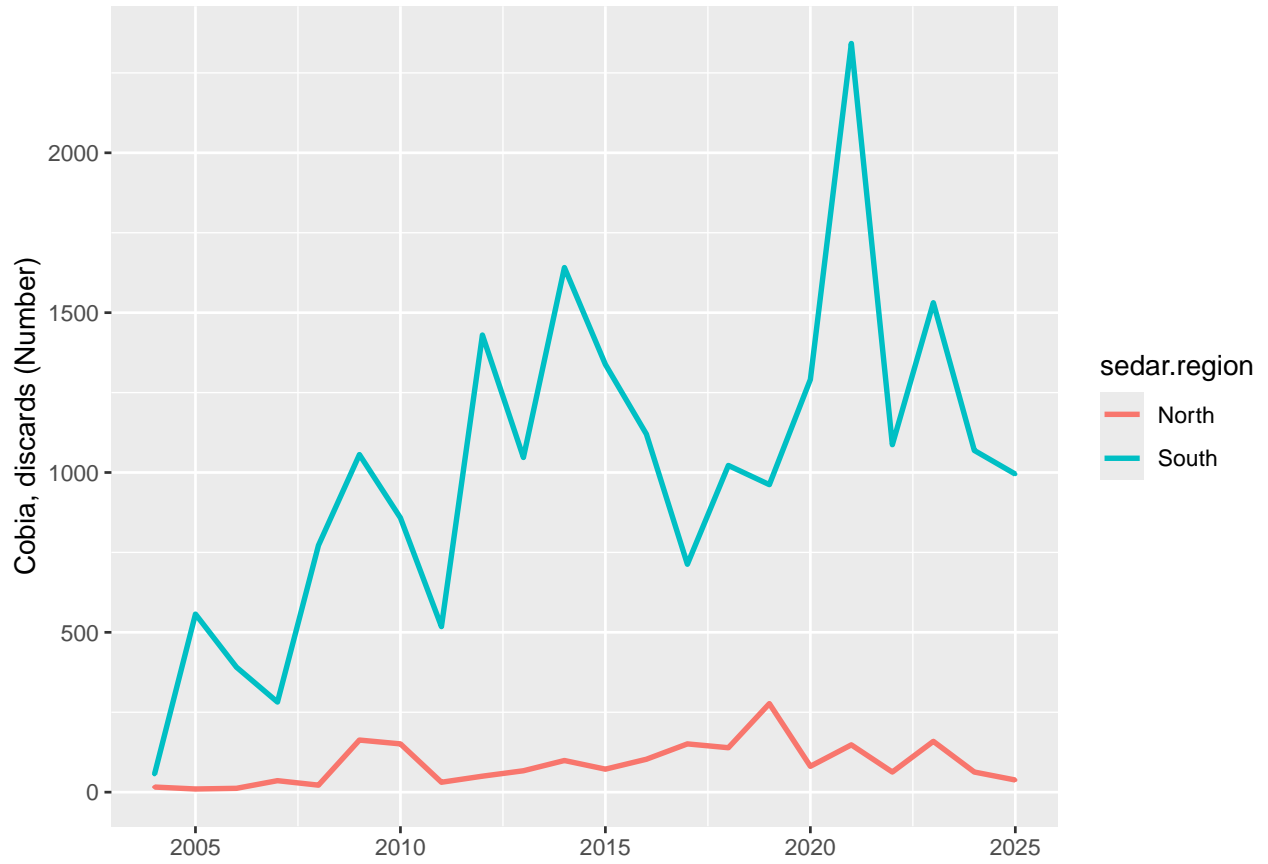


Figure 9: Cobia discards in number by region

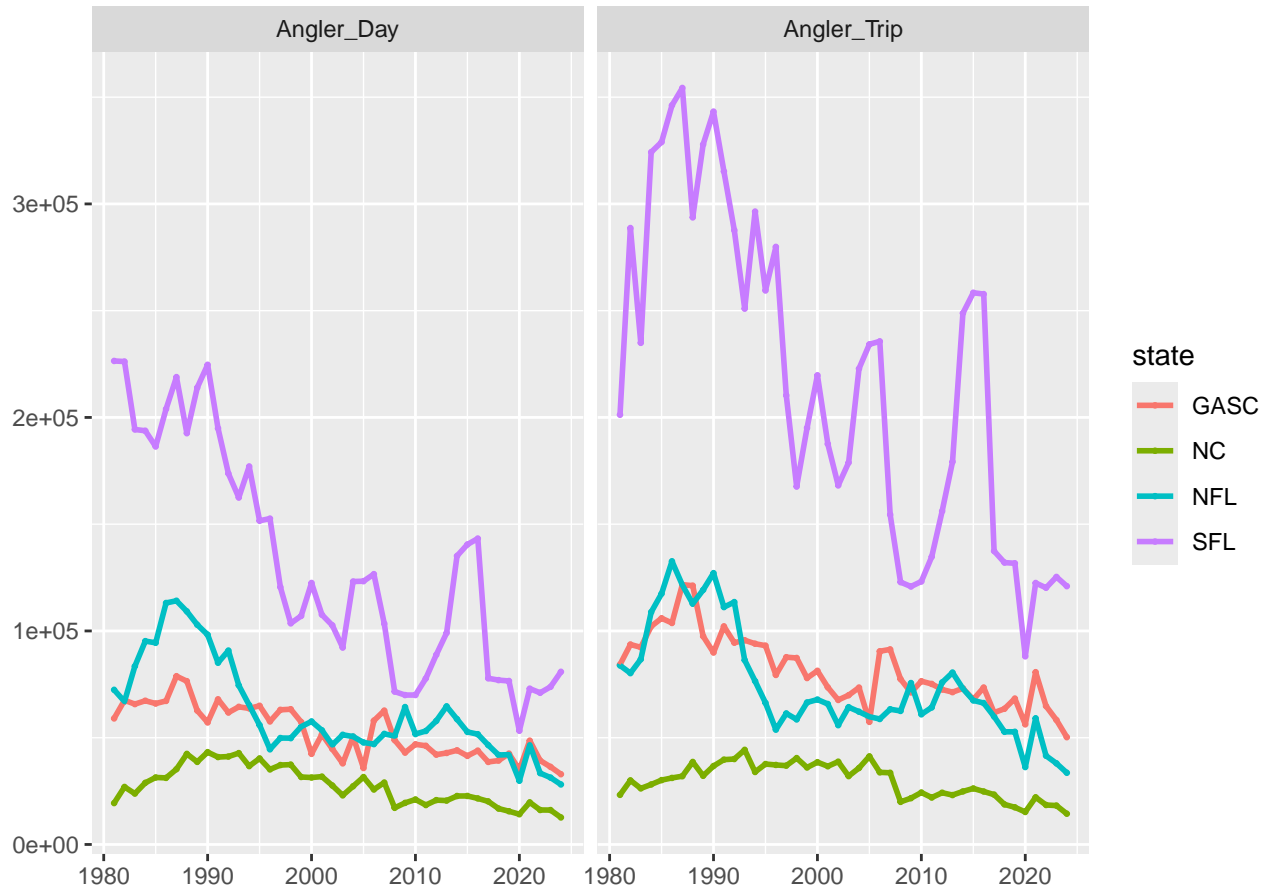


Figure 10: SRHS total estimated angler days and angler trips by state.

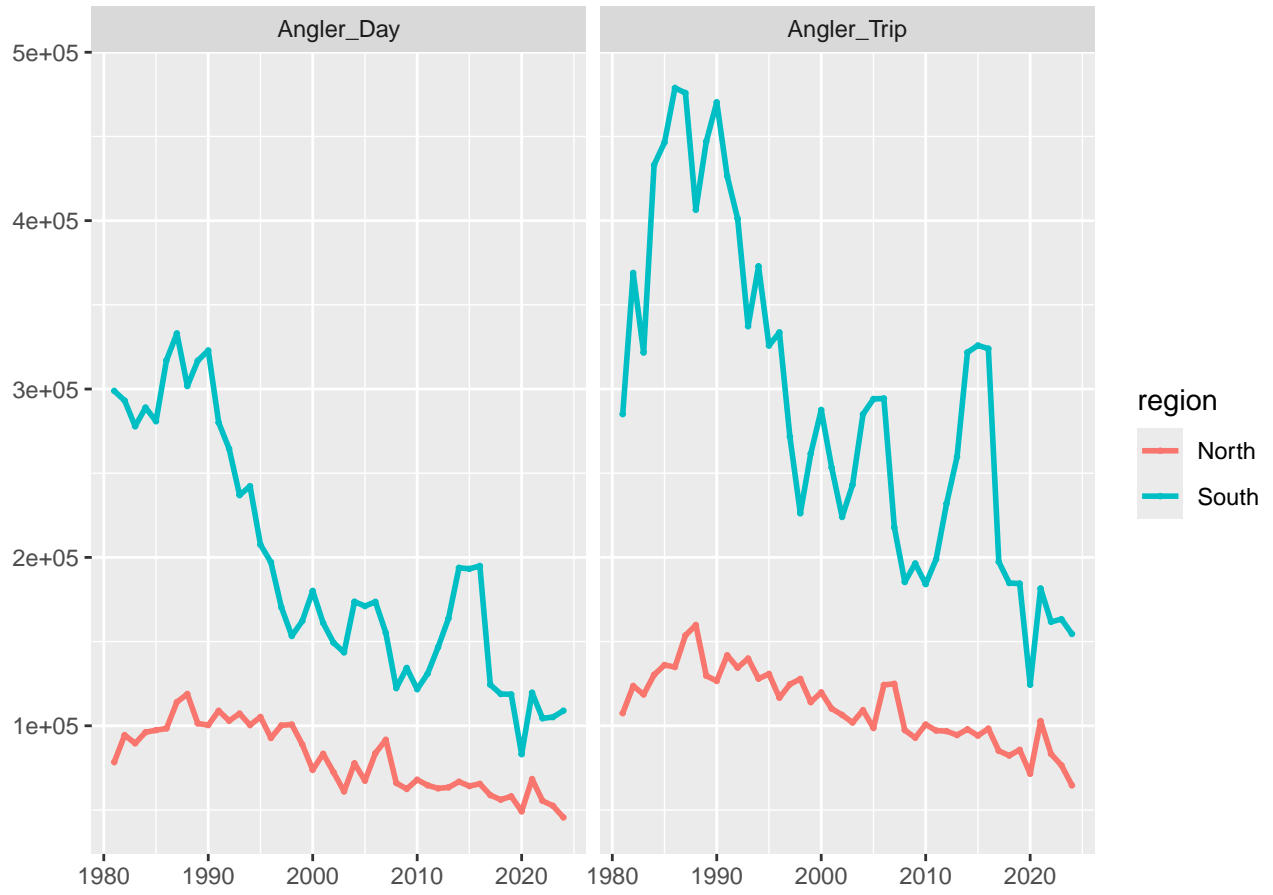


Figure 11: SRHS total estimated angler days and angler trips by region.

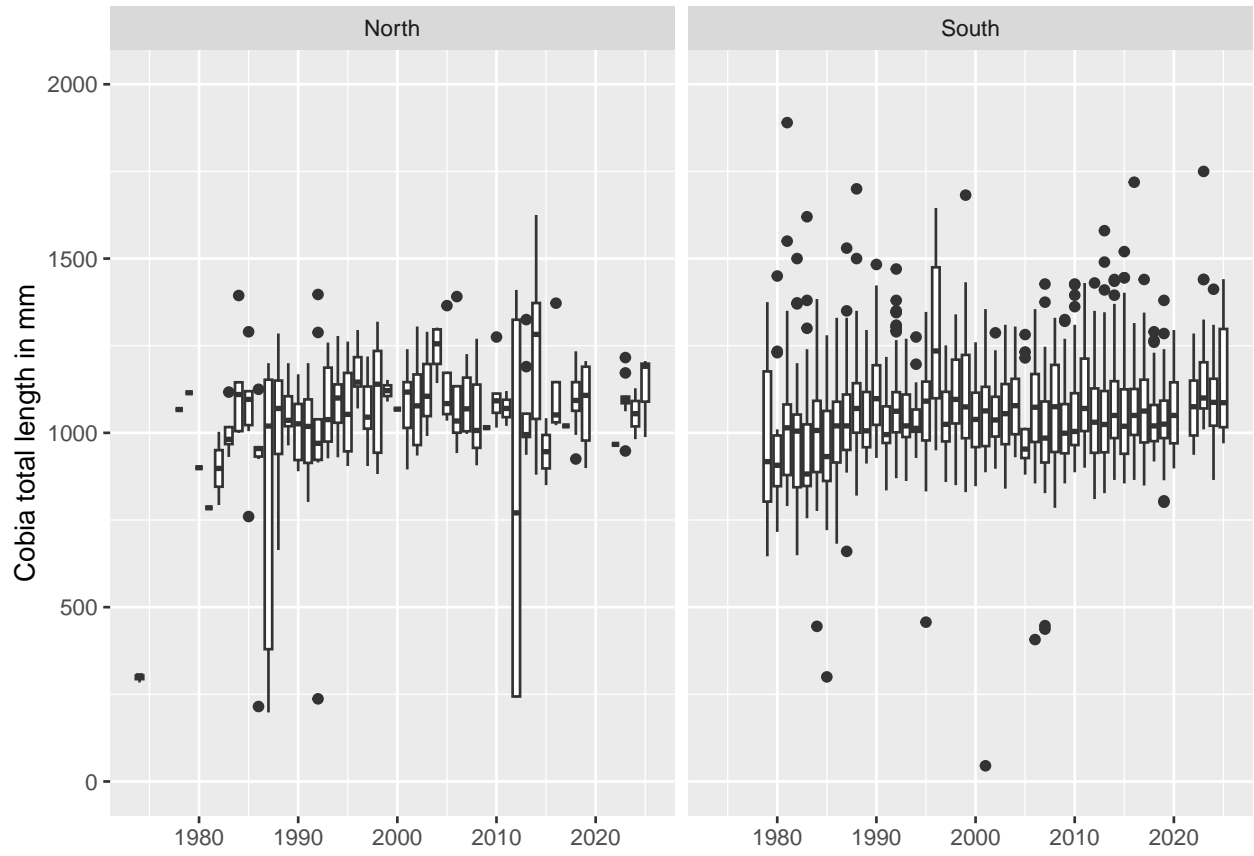


Figure 12: Cobia total length.

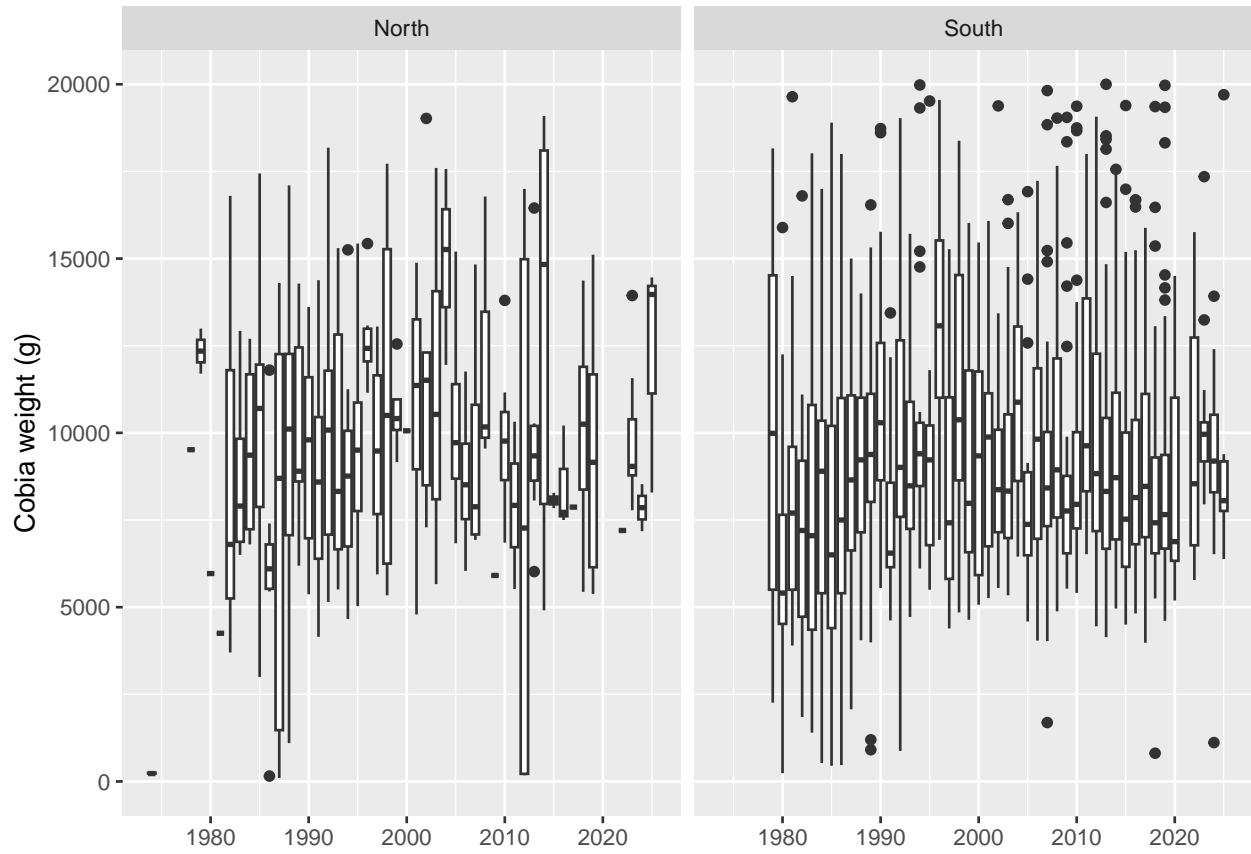


Figure 13: Cobia weight (g).

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