General Recreational Survey Data for Red Snapper in the South Atlantic

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SEDAR90-DW-03

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

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

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

Parameters for data prepared for SEDAR 90 recreational catch data:

- Species: Red Snapper
- Year Range: 1981 - 2024
- Geographic Range: South Atlantic states from eastern Florida to North Carolina.
- Fishing Modes: Charter and Private
- 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 7-9). For SEDAR 90 Red Snapper, this includes any weights heavier than 52.668 pounds.

Summary of Data Imputations

Estimate	Strata	Imputed	Rationale
Catch	1981 Wave1 (FLE)	Yes	Wave1 catch in 1982-1984 was not negligible
Effort	1981 Wave1 (FLE)	Yes	Effort is not species-specific, need to account for effort in Wave1 before MRIP started

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Catch and Sample Size Information for Particular Domains:

Annual estimates that appear relatively large/small compared to the adjacent years were further investigated by identifying and summarizing which strata were disproportionately contributing to the estimate. Estimates investigated are more likely to be high given the inherent zero-boundary constraint in catch data (>=0) that complicates identification of low estimates.

- 1981 landings estimate: 414,163 fish
  - Stratum: eastern Florida, private mode, wave 3, and ocean > 3 miles
  - Intercept Records: a total of 3 angler trips that resulted in a landings estimate of 148,832 fish (36% of the total annual estimate)
    - One angler trip harvested 10 Red Snapper (seen by interviewer)
    - One angler trip harvested 8 Red Snapper (seen by interviewer)
    - One angler trip harvested 1 Red Snapper (seen by interviewer)
  - The intercept that harvested 10 Red Snapper accounts for 53% of the total landings estimate for this stratum, with another 42% attributed to the intercept that harvested 8 Red Snapper. These fish were all seen by the dockside sampler, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. These two intercepts have the highest observations of landed Red Snapper from any private trip in 1981, but for-hire intercepts in 1981 observed similarly high landings (e.g., two intercepts with 15 fish, one with 14 fish), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper (albeit in the upper tail).

- 1984 landings estimate: 487,310 fish
  - Stratum: eastern Florida, private mode, wave 2, and ocean > 3 miles
  - Intercept Records: a total of 10 angler trips that resulted in a landings estimate of 284,277 fish (58% of the total annual estimate)
    - One angler trip harvested 34 Red Snapper (seen by interviewer) and released 3 live Red Snapper
    - One angler trip harvested 34 Red Snapper (seen by interviewer)
    - Two angler trips harvested 8 Red Snapper (not seen by interviewer)
    - One angler trip harvested 2 Red Snapper (not seen by interviewer)
    - One angler trip harvested 1 Red Snapper (not seen by interviewer)
    - One angler trip harvested 1 Red Snapper (seen by interviewer)
    - Three angler trips released 3 live Red Snapper

  - The two intercepts that harvested 34 Red Snapper each account for 33% of the total landings estimate for this stratum. These fish were all seen by the dockside sampler, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. These two intercepts have the highest observations of landed Red Snapper from any private trip in 1984, but for-hire intercepts in 1984 observed similarly high landings (e.g., one intercept with 35 fish, one with 37 fish, one with 56), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper (albeit in the upper tail).

- 1985 landings estimate: 557,006 fish
  - Stratum: eastern Florida, private mode, wave 1, and ocean > 3 miles
  - Intercept Records: a total of 4 angler trips that resulted in a landings estimate of 223,445 fish (40% of the total annual estimate)
    - One angler trip harvested 16 Red Snapper (seen by interviewer) and released 4 live Red Snapper
    - One angler trip harvested 6 Red Snapper (seen by interviewer)
    - Two angler trips released 3 live Red Snapper
  - The single intercept that harvested 16 Red Snapper accounts for 73% of the total landings estimate for this stratum. These fish were all seen by the dockside sampler, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. This intercept has the second highest observations of landed Red Snapper from any private trip in 1985, with the highest being a private intercept that reported 17 landed Red Snapper (seen by interviewer), but for-hire intercepts in 1985 observed similarly high landings (e.g., one intercept with 30 fish, one with 23 fish), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper (albeit in the upper tail)

- 2008 landings estimate: 328,723 fish
  - Stratum: eastern Florida, private mode, wave 3, and ocean > 3 miles
  - Intercept Records: a total of 44 angler trips that resulted in a landings estimate of 84,336 fish (26% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.79	8
Harvest not seen by interviewer	0	0	0	0
Released live fish	0	2	2.80	10

- All landed fish for this stratum were all seen by the dockside sampler, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contribution being from an intercept that harvested 6 Red Snapper (33% of the estimate for this stratum). Ten intercepts for this stratum reported non-zero landings of Red Snapper, a few of which observed similar magnitudes of Red Snapper landings (i.e., intercepts that harvested 7 and 8 fish).

- Stratum: eastern Florida, private mode, wave 6, and ocean > 3 miles
- Intercept Records: a total of 24 angler trips that resulted in a landings estimate of 61,822 fish (19% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.71	7
Harvest not seen by interviewer	0	0	0.29	3
Released live fish	0	2	4.00	20

- Ten intercepts for this stratum reported non-zero landings of Red Snapper. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contributions being from intercepts that harvested 7 Red Snapper (46% of the estimate for this stratum) and harvested 4 Red Snapper (26% of the estimate for this stratum). All the fish from these two intercepts were seen by dockside samplers, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. Similarly high observations of landed Red Snapper were observed by other private trips intercepted in 2008 (e.g., two trips with 8 fish, another with 7 fish, two with 6 fish), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper (albeit in the upper tail).

- Stratum: eastern Florida, private mode, wave 2, and ocean > 3 miles
- Intercept Records: a total of 17 angler trips that resulted in a landings estimate of 60,428 fish (18% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.61	4
Harvest not seen by interviewer	0	0	0	0
Released live fish	0	2	4.41	18

- Six intercepts for this stratum reported non-zero landings of Red Snapper. All landed fish for this strata were seen by dockside samplers, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. The intercept that harvested 4 Red Snapper accounts for 61% of the total landings estimate for this stratum, with another 15% attributed to an intercept that harvested 2 Red Snapper. Similarly high observations of landed Red Snapper were observed by other private trips intercepted in 2008 (e.g., two trips with 8 fish, another with 7 fish, two with 6 fish), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper.

- 2009 landings estimate: 421,979 fish
  - Stratum: eastern Florida, private mode, wave 2, and ocean > 3 miles
  - Intercept Records: a total of 45 angler trips that resulted in a landings estimate of 155,236 fish (37% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.99	8
Harvest not seen by interviewer	0	0	0.18	3
Released live fish	1	2	2.64	8

  - Thirteen intercepts for this stratum reported non-zero landings of Red Snapper. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contributions being from two intercepts that harvested 3 Red Snapper (each contributing 12% to the estimate for this stratum) and one intercept that harvested 6 Red Snapper (11% of the estimate for this stratum). The two intercepts for this stratum that observed the highest landings of Red Snapper (e.g., two trips with 8 fish) each contributed 7% to the estimate for this stratum. The relative similarity in contribution of multiple intercepts to the catch estimate for this stratum suggests that these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper.

- Stratum: eastern Florida, private mode, wave 1, and ocean > 3 miles
- Intercept Records: a total of 31 angler trips that resulted in a landings estimate of 126,211 fish (30% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.85	10
Harvest not seen by interviewer	0	0	0.58	4
Released live fish	0	1	1.90	6

- Thirteen intercepts for this stratum reported non-zero landings of Red Snapper. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contributions being from intercepts that harvested 10 Red Snapper (31% of the estimate for this stratum) and harvested 4 Red Snapper (12% of the estimate for this stratum). All the fish from these two intercepts were seen by dockside samplers, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. The intercept with 10 harvested Red Snapper had the highest observation of landed Red Snapper from any trip in this stratum, but other private intercepts in 2009 observed similarly high landings (e.g., another intercept with 10 fish, two with 8 fish, one with 7 fish, three with 6 fish), suggesting these observations fall within the distribution of plausible catch values for South Atlantic Red Snapper (albeit in the upper tail).

- 2018 landings estimate: 705,973 fish
- 2018 discard estimate: 3,225,404 fish
  - Stratum: eastern Florida, private mode, wave 4, and ocean > 3 miles
  - Intercept Records: a total of 192 angler trips that resulted in a landings estimate of 677,203 fish (96% of the total annual estimate) and a discard estimate of 1,671,594 fish (52% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.87	5
Harvest not seen by interviewer	0	0	0.19	1
Released live fish	0	1	1.77	20

  - One hundred and thirty-two intercepts for this stratum reported non-zero landings of Red Snapper. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contribution from an intercept that harvested 4 Red Snapper (8% of the estimate for this

stratum). Similar observations of landed Red Snapper were observed by other private trips intercepted in 2018 (e.g., three trips with 5 fish, six with 4 fish, thirteen with 3 fish), suggesting these observations fall within the distribution of plausible landings values for South Atlantic Red Snapper. All of these landed fish were seen by dockside samplers, suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded.

- One hundred and nine intercepts reported non-zero discards of Red Snapper. No single intercept contributed more than 50% to the total discard estimate for this stratum, with the largest contribution from the two intercepts that each released 20 live Red Snapper (each contributing 9% of the estimate for this stratum). These two intercepts had the highest observations of discarded Red Snapper from any trip in this stratum, but other private intercepts in 2018 observed similarly high discards (e.g., one intercept with 40 fish, two with 25 fish, one other with 20 fish, one with 18 fish), suggesting these observations fall within the distribution of plausible discard values for South Atlantic Red Snapper.

- 2020 landings estimate: 558,203 fish
- 2020 discard estimate: 3,416,098 fish
  - Stratum: eastern Florida, private mode, wave 4, and ocean > 3 miles
  - Intercept Records: a total of 67 angler trips that resulted in a landings estimate of 516,372 fish (93% of the total annual estimate) and a discard estimate of 964,042 fish (28% of the total annual estimate)

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.62	3
Harvest not seen by interviewer	0	0	0.13	1
Released live fish	0	1	1.85	10

  - Thirty-seven intercepts for this stratum reported non-zero landings of Red Snapper. No single intercept contributed more than 50% to the total landings estimate for this stratum, with the largest contribution from an intercept that harvested 3 Red Snapper (10% of the estimate for this stratum). Similar observations of landed Red Snapper were observed for this stratum (e.g., three other trips with 3 fish, six trips with 2 fish), all of which were seen by dockside samplers suggesting species identifications were not influenced by angler recall and the number of fish harvested were accurately recorded. Other private trips intercepted in 2020 reported even higher landings (e.g., three with 5 fish, three with 4 fish, two other trips with 3 fish), suggesting

these observations fall within the distribution of plausible landings values for South Atlantic Red Snapper.

- Fifty-one intercepts reported non-zero discards of Red Snapper. No single intercept contributed more than 50% to the total discard estimate for this stratum, with the largest contribution from the one intercept that released 10 live Red Snapper (17% of the estimate for this stratum). This intercept had the highest observations of discarded Red Snapper from any trip in this stratum, but other private intercepts in 2020 observed higher discards (e.g., one intercept with 50 fish, one with 30 fish, one other with 24 fish, two with 20 fish, two with 15 fish, six with 12 fish, eight other trips with 10 fish), suggesting these observations fall within the distribution of plausible discard values for South Atlantic Red Snapper.

Appendices

Appendix A. Additional Details of Survey Data and SEFSC Estimation

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References

Cody, R. 2021. MRIP 2020 Estimates: Overview of Methodology and Select Catch and Effort Estimates. Office of Science and Technology (OST) Marine Recreational Information Program (MRIP) Fisheries Statistics Division. Silver Spring, MD. Presentation given to the Mid-Atlantic Fishery Management Council at the June 8 2021 council meeting. Retrieved from: https://www.mafmc.org/briefing/june-2021

Dettloff, K and VM Matter. 2019a. SEDAR 64-RD-12. Model-estimated conversion factors for calibrating Coastal Household Telephone Survey (CHTS) charterboat catch and effort estimates with For Hire Survey (FHS) estimates in the Atlantic and Gulf of Mexico with application to red grouper and greater amberjack. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics Division. Miami, FL.

Dettloff, K and VM Matter. 2019b. SEDAR 67-WP-06. Sample Size Sensitivity Analysis for calculating MRIP Weight Estimates. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics Division. Miami, FL.

Dettloff, K, VM Matter, and MA Nuttall. 2020. SEDAR 68-DW-10. SEFSC Computation of Variance Estimates for Custom Data Aggregations from the Marine Recreational Information Program. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics Division. Miami, FL.

Matter, VM and A Rios. 2013. SEDAR 32-DW-02. MRFSS to MRIP Adjustment Ratios and Weight Estimation Procedures for South Atlantic and Gulf of Mexico Managed Species. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics Division. Miami, FL.

Matter, VM and MA Nuttall. 2020. SEDAR 68-DW-13. Marine Recreational Information Program: Metadata for the Atlantic, Gulf of Mexico, and Caribbean Regions. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics Division. Miami, FL.

Personal Communication from the National Marine Fisheries Service (NMFS), Office of Science and Technology, Fisheries Statistics Division. Recreational Fisheries Statistics Queries. US Department of Commerce. Retrieved Mar 11, 2025.

Nuttall, MA and K Dettloff. 2022. SEDAR 74-DW-12. SEFSC Computation of Uncertainty for General Recreational Landings in Weight Estimates, with Application to SEDAR 74 Gulf of Mexico Red Snapper. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Sustainable Fisheries Division. Miami, FL.

Papacostas, KJ and J Foster. 2021. The Marine Recreational Information Program: Survey Design and Statistical Methods for Estimation of Recreational Fisheries Catch and Effort. Available at: https://www.fisheries.noaa.gov/resource/document/survey-design-and-statistical-methods-estimation-recreational-fisheries-catch-and

SEDAR. 2015. SEDAR-PW-07. SEDAR Procedural Workshop 7: Data Best Practices. SEDAR, North Charleston, SC. 151 pp. Available online at: http://sedarweb.org/pw-07

Table 1. Annual landings (AB1) and discards (B2) of Red Snapper in numbers of fish by state and year from all data sources (MRIP).

	FLE		GA		SC		NC		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	400,463	855	0	0	13,701	0	0	0	414,163	855
1982	94,453	0	0	0	1,603	0	0	0	96,056	0
1983	99,651	21,042	2,917	0	12,872	0	0	0	115,439	21,042
1984	467,340	121,057	1,674	95	5,989	0	12,306	0	487,310	121,152
1985	447,571	128,174	10,049	0	11,163	0	88,222	11,324	557,006	139,498
1986	149,743	0	2,895	0	2,530	0	1,498	0	156,665	0
1987	61,481	162,180	1,498	0	364	9	59,190	0	122,532	162,190
1988	174,626	61,695	7,409	0	998	0	14,138	0	197,170	61,695
1989	239,156	57,047	2,067	0	4,367	0	5,705	0	251,295	57,047
1990	23,227	0	0	0	0	0	6,533	0	29,760	0
1991	52,375	44,765	1,112	916	495	45	18,504	0	72,485	45,726
1992	71,733	27,128	3,077	10,265	0	0	1,296	1,313	76,105	38,706
1993	26,534	170,612	2,749	3,215	0	1,376	884	2,810	30,167	178,013
1994	24,839	119,120	4,305	4,228	146	0	3,418	537	32,708	123,886
1995	8,290	81,744	1,204	5,721	0	0	7,746	400	17,240	87,866
1996	27,712	37,867	1,084	321	231	0	951	466	29,977	38,653
1997	9,942	15,049	139	0	6,653	1,859	0	0	16,734	16,909
1998	22,134	100,302	17,240	6,869	999	1,448	1,557	79	41,929	108,698
1999	68,168	307,035	18,872	11,076	9,290	6,659	2,872	0	99,202	324,770
2000	122,151	467,387	1,591	13,070	16,944	72,568	1,336	2,034	142,022	555,058
2001	129,448	531,247	1,104	2,264	346	219	4,166	1,570	135,065	535,301
2002	141,617	338,462	1,927	1,108	1,356	108	7,618	641	152,517	340,320
2003	48,881	397,993	674	1,989	7,437	4,751	3,698	0	60,691	404,733
2004	89,468	686,651	10,222	24,655	563	229	2,947	0	103,201	711,535
2005	38,225	125,480	7,501	3,126	155	1,227	7,492	0	53,373	129,834
2006	43,300	399,440	9,371	52,499	5,289	81	4,271	499	62,230	452,519
2007	55,754	911,600	2,121	51,309	1,984	666	227	0	60,086	963,575
2008	311,209	1,376,641	13,386	38,714	3,124	6,556	1,003	572	328,723	1,422,482
2009	413,297	944,404	5,055	14,992	1,324	1,251	2,303	249	421,979	960,896
2010	0	445,989	0	169	58	16,135	0	3,702	58	465,996
2011	0	248,488	0	445	0	192	0	2,118	0	251,243
2012	10,782	359,238	2,726	1,127	0	10,506	2,355	12,302	15,863	383,173
2013	54,477	186,875	0	20,113	0	2,331	0	956	54,477	210,275
2014	207,319	652,372	8,784	68,778	271	12,539	199	9,080	216,573	742,770

	FLE		GA		SC		NC		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2015	2,035	1,295,026	0	2,515	0	6,924	0	4,295	2,035	1,308,760
2016	77	2,353,964	0	7,846	0	10,285	0	20,467	77	2,392,562
2017	157,674	1,497,878	0	85,885	1,815	29,748	0	3,270	159,490	1,616,781
2018	682,128	3,174,288	23,453	33,646	0	17,023	393	447	705,973	3,225,404
2019	191,139	1,798,505	15,859	51,520	14,758	107,723	0	7,827	221,755	1,965,576
2020	519,000	3,156,262	14,406	109,688	23,362	129,314	1,434	20,834	558,203	3,416,098
2021	75,640	2,011,176	6,779	72,553	0	85,157	7,631	18,024	90,049	2,186,909
2022	128,407	2,291,818	2,689	169,917	0	73,572	10,408	45,769	141,504	2,581,075
2023	369,093	1,935,612	45,086	15,445	685	59,484	769	62,008	415,633	2,072,548
2024	360,268	2,422,650	2,949	163,501	0	103,715	0	75,517	363,217	2,765,382

Table 2. Annual landings (AB1) and discards (B2) of Red Snapper in numbers of fish by mode and year from all data sources (MRIP).

	Cbt		Priv		Total	
Year	AB1	B2	AB1	B2	AB1	B2
1981	60,754	855	353,410	0	414,163	855
1982	4,073	0	91,983	0	96,056	0
1983	80,450	21,042	34,990	0	115,439	21,042
1984	116,403	90,286	370,907	30,866	487,310	121,152
1985	149,926	29,174	407,079	110,324	557,006	139,498
1986	54,435	0	102,231	0	156,665	0
1987	41,535	9	80,997	162,180	122,532	162,190
1988	22,664	0	174,506	61,695	197,170	61,695
1989	25,797	0	225,497	57,047	251,295	57,047
1990	6,366	0	23,394	0	29,760	0
1991	36,705	45	35,780	45,681	72,485	45,726
1992	34,412	11,192	41,693	27,514	76,105	38,706
1993	3,633	17,052	26,534	160,961	30,167	178,013
1994	11,123	4,766	21,585	119,120	32,708	123,886
1995	13,200	6,121	4,040	81,744	17,240	87,866
1996	1,913	605	28,064	38,048	29,977	38,653
1997	11,831	1,859	4,903	15,049	16,734	16,909
1998	21,714	7,450	20,215	101,248	41,929	108,698
1999	32,748	39,019	66,455	285,751	99,202	324,770
2000	12,102	30,557	129,920	524,502	142,022	555,058
2001	13,056	26,832	122,008	508,469	135,065	535,301
2002	57,511	69,207	95,005	271,113	152,517	340,320
2003	20,299	22,731	40,391	382,002	60,691	404,733
2004	13,592	41,562	89,609	669,974	103,201	711,535
2005	15,676	35,428	37,697	94,405	53,373	129,834
2006	16,065	21,696	46,165	430,823	62,230	452,519
2007	6,570	72,859	53,516	890,716	60,086	963,575
2008	11,423	33,507	317,299	1,388,975	328,723	1,422,482
2009	19,418	24,816	402,561	936,080	421,979	960,896
2010	58	20,859	0	445,137	58	465,996
2011	0	13,430	0	237,813	0	251,243
2012	2,449	25,972	13,414	357,201	15,863	383,173
2013	930	6,750	53,547	203,525	54,477	210,275
2014	5,698	36,001	210,875	706,769	216,573	742,770

	Cbt		Priv		Total	
Year	AB1	B2	AB1	B2	AB1	B2
2015	738	77,501	1,297	1,231,259	2,035	1,308,760
2016	77	121,427	0	2,271,135	77	2,392,562
2017	4,170	216,503	155,320	1,400,278	159,490	1,616,781
2018	2,751	105,012	703,222	3,120,392	705,973	3,225,404
2019	22,429	81,530	199,326	1,884,046	221,755	1,965,576
2020	3,232	128,844	554,970	3,287,254	558,203	3,416,098
2021	5,312	154,295	84,737	2,032,614	90,049	2,186,909
2022	2,285	85,614	139,219	2,495,461	141,504	2,581,075
2023	7,110	102,978	408,523	1,969,570	415,633	2,072,548
2024	3,995	120,348	359,222	2,645,035	363,217	2,765,382

Table 3. Red Snapper landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year from all data sources (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 Red Snapper.

	Cbt				Priv			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	60,754	0.59	54 (6)	487 (24)	353,410	0.46	840 (8)	6,948 (11)
1982	4,073	0.70	45 (3)	444 (5)	91,983	0.57	1,121 (11)	9,599 (14)
1983	80,450	0.34	143 (20)	1,617 (79)	34,990	0.92	1,100 (3)	10,271 (4)
1984	116,403	0.50	185 (29)	2,269 (116)	370,907	0.46	837 (11)	7,298 (15)
1985	149,926	0.61	140 (19)	1,505 (91)	407,079	0.59	1,400 (15)	11,225 (23)
1986	54,435	0.47	220 (15)	2,105 (80)	102,231	0.51	2,264 (12)	18,258 (17)
1987	41,535	0.45	360 (16)	3,450 (22)	80,997	0.32	2,137 (20)	18,785 (21)
1988	22,664	0.40	382 (24)	3,335 (32)	174,506	0.53	2,525 (19)	20,957 (21)
1989	25,797	0.59	412 (30)	4,072 (35)	225,497	0.36	3,175 (22)	26,346 (29)
1990	6,366	0.64	297 (15)	3,289 (16)	23,394	0.55	3,484 (6)	31,280 (8)
1991	36,705	0.49	349 (13)	3,793 (18)	35,780	0.64	3,483 (6)	32,082 (6)
1992	34,412	0.56	483 (26)	4,671 (50)	41,693	0.38	3,929 (13)	35,810 (13)
1993	3,633	0.33	332 (13)	3,871 (17)	26,534	0.40	3,523 (9)	31,532 (10)
1994	11,123	0.41	427 (23)	5,822 (29)	21,585	0.51	3,813 (8)	34,366 (10)
1995	13,200	0.48	396 (17)	5,172 (20)	4,040	0.60	3,490 (3)	31,020 (3)
1996	1,913	0.45	572 (7)	7,783 (9)	28,064	0.61	3,462 (8)	32,285 (9)
1997	11,831	0.58	648 (9)	8,024 (10)	4,903	0.62	3,752 (3)	35,011 (3)
1998	21,714	0.55	698 (16)	7,827 (23)	20,215	0.48	3,718 (10)	34,649 (10)
1999	32,748	0.34	670 (38)	5,717 (57)	66,455	0.31	3,551 (20)	35,131 (25)
2000	12,102	0.32	681 (34)	7,071 (55)	129,920	0.24	3,597 (32)	34,429 (38)
2001	13,056	0.29	685 (35)	7,438 (50)	122,008	0.30	4,259 (26)	44,355 (37)
2002	57,511	0.33	741 (44)	7,412 (61)	95,005	0.27	3,884 (25)	39,503 (31)
2003	20,299	0.27	654 (48)	6,329 (64)	40,391	0.34	4,247 (18)	38,004 (21)
2004	13,592	0.29	1,112 (38)	9,068 (49)	89,609	0.27	3,172 (21)	30,278 (31)
2005	15,676	0.35	1,449 (26)	11,395 (36)	37,697	0.33	2,798 (13)	27,192 (15)
2006	16,065	0.37	1,343 (30)	9,957 (40)	46,165	0.35	3,188 (12)	32,054 (15)
2007	6,570	0.34	1,322 (18)	10,051 (20)	53,516	0.36	3,411 (15)	32,992 (22)
2008	11,423	0.39	1,357 (26)	9,920 (30)	317,299	0.29	3,208 (32)	31,426 (50)
2009	19,418	0.53	1,284 (26)	8,633 (29)	402,561	0.28	3,183 (30)	29,517 (49)
2010	58	1.00	1,438 (1)	10,422 (1)	0	0.00	3,615 (0)	33,361 (0)
2011	0	0.00	1,254 (0)	8,884 (0)	0	0.00	3,347 (0)	29,733 (0)
2012	2,449	0.49	1,140 (8)	8,772 (9)	13,414	0.76	3,440 (3)	31,640 (5)
2013	930	0.83	574 (3)	3,314 (3)	53,547	0.82	3,361 (2)	27,579 (9)

	Cbt				Priv			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2014	5,698	0.50	1,113 (11)	7,729 (34)	210,875	0.45	3,712 (18)	30,019 (60)
2015	738	1.00	1,134 (1)	7,867 (1)	1,297	1.00	3,907 (1)	31,859 (1)
2016	77	1.00	1,284 (1)	8,957 (1)	0	0.00	3,814 (0)	29,027 (0)
2017	4,170	0.72	1,282 (3)	9,359 (10)	155,320	0.78	4,039 (6)	33,713 (32)
2018	2,751	0.66	1,502 (6)	11,969 (12)	703,222	0.43	4,007 (13)	34,147 (134)
2019	22,429	0.90	1,533 (5)	11,163 (10)	199,326	0.55	4,056 (9)	34,530 (21)
2020	3,232	0.59	1,821 (7)	13,980 (9)	554,970	0.78	5,098 (9)	44,100 (53)
2021	5,312	0.68	1,919 (6)	14,701 (21)	84,737	0.45	5,013 (8)	40,982 (25)
2022	2,285	0.63	1,727 (5)	12,016 (11)	139,219	0.51	4,707 (7)	34,525 (37)
2023	7,110	0.48	1,757 (13)	11,746 (28)	408,523	0.51	4,885 (16)	36,872 (59)
2024	3,995	0.79	1,715 (5)	10,813 (15)	359,222	0.66	4,789 (10)	33,250 (37)

Table 4. Red Snapper discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year from all data sources (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 Red Snapper.

	Cbt				Priv			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	855	1.00	54 (1)	487 (1)	0	0.00	840 (0)	6,948 (0)
1982	0	0.00	45 (0)	444 (0)	0	0.00	1,121 (0)	9,599 (0)
1983	21,042	0.71	143 (6)	1,617 (26)	0	0.00	1,100 (0)	10,271 (0)
1984	90,286	0.95	185 (8)	2,269 (32)	30,866	1.00	837 (1)	7,298 (4)
1985	29,174	0.65	140 (4)	1,505 (12)	110,324	0.92	1,400 (2)	11,225 (5)
1986	0	0.00	220 (0)	2,105 (0)	0	0.00	2,264 (0)	18,258 (0)
1987	9	1.00	360 (1)	3,450 (1)	162,180	0.83	2,137 (3)	18,785 (7)
1988	0	0.00	382 (0)	3,335 (0)	61,695	0.44	2,525 (6)	20,957 (7)
1989	0	0.00	412 (0)	4,072 (0)	57,047	0.53	3,175 (5)	26,346 (8)
1990	0	0.00	297 (0)	3,289 (0)	0	0.00	3,484 (0)	31,280 (0)
1991	45	1.00	349 (1)	3,793 (2)	45,681	0.53	3,483 (6)	32,082 (7)
1992	11,192	0.64	483 (9)	4,671 (42)	27,514	0.44	3,929 (9)	35,810 (10)
1993	17,052	0.82	332 (4)	3,871 (16)	160,961	0.76	3,523 (14)	31,532 (20)
1994	4,766	0.89	427 (6)	5,822 (14)	119,120	0.41	3,813 (12)	34,366 (20)
1995	6,121	0.50	396 (10)	5,172 (20)	81,744	0.45	3,490 (13)	31,020 (22)
1996	605	0.56	572 (4)	7,783 (8)	38,048	0.72	3,462 (5)	32,285 (9)
1997	1,859	1.00	648 (1)	8,024 (8)	15,049	0.43	3,752 (7)	35,011 (9)
1998	7,450	0.79	698 (8)	7,827 (16)	101,248	0.53	3,718 (15)	34,649 (20)
1999	39,019	0.49	670 (19)	5,717 (56)	285,751	0.26	3,551 (31)	35,131 (77)
2000	30,557	0.33	681 (32)	7,071 (93)	524,502	0.26	3,597 (47)	34,429 (90)
2001	26,832	0.27	685 (29)	7,438 (113)	508,469	0.31	4,259 (44)	44,355 (103)
2002	69,207	0.33	741 (33)	7,412 (138)	271,113	0.28	3,884 (43)	39,503 (80)
2003	22,731	0.26	654 (40)	6,329 (114)	382,002	0.36	4,247 (34)	38,004 (72)
2004	41,562	0.29	1,112 (37)	9,068 (119)	669,974	0.25	3,172 (33)	30,278 (93)
2005	35,428	0.37	1,449 (32)	11,395 (120)	94,405	0.29	2,798 (20)	27,192 (44)
2006	21,696	0.32	1,343 (28)	9,957 (111)	430,823	0.38	3,188 (28)	32,054 (69)
2007	72,859	0.54	1,322 (25)	10,051 (71)	890,716	0.26	3,411 (39)	32,992 (110)
2008	33,507	0.65	1,357 (26)	9,920 (92)	1,388,975	0.26	3,208 (41)	31,426 (140)
2009	24,816	0.63	1,284 (24)	8,633 (49)	936,080	0.26	3,183 (35)	29,517 (122)
2010	20,859	0.64	1,438 (28)	10,422 (53)	445,137	0.38	3,615 (26)	33,361 (52)
2011	13,430	0.73	1,254 (22)	8,884 (49)	237,813	0.49	3,347 (13)	29,733 (21)
2012	25,972	0.49	1,140 (20)	8,772 (66)	357,201	0.34	3,440 (20)	31,640 (46)
2013	6,750	0.49	574 (19)	3,314 (69)	203,525	0.33	3,361 (16)	27,579 (50)

	Cbt				Priv			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp
2014	36,001	0.31	1,113 (44)	7,729 (160)	706,769	0.25	3,712 (56)	30,019 (156)
2015	77,501	0.35	1,134 (36)	7,867 (123)	1,231,259	0.38	3,907 (45)	31,859 (124)
2016	121,427	0.63	1,284 (25)	8,957 (70)	2,271,135	0.29	3,814 (58)	29,027 (179)
2017	216,503	0.61	1,282 (29)	9,359 (107)	1,400,278	0.28	4,039 (53)	33,713 (179)
2018	105,012	0.34	1,502 (46)	11,969 (172)	3,120,392	0.31	4,007 (54)	34,147 (212)
2019	81,530	0.34	1,533 (32)	11,163 (94)	1,884,046	0.26	4,056 (53)	34,530 (154)
2020	128,844	0.34	1,821 (79)	13,980 (214)	3,287,254	0.31	5,098 (63)	44,100 (175)
2021	154,295	0.33	1,919 (106)	14,701 (457)	2,032,614	0.22	5,013 (72)	40,982 (240)
2022	85,614	0.21	1,727 (78)	12,016 (288)	2,495,461	0.43	4,707 (61)	34,525 (186)
2023	102,978	0.23	1,757 (89)	11,746 (373)	1,969,570	0.25	4,885 (77)	36,872 (238)
2024	120,348	0.20	1,715 (74)	10,813 (408)	2,645,035	0.33	4,789 (72)	33,250 (239)

Table 5. Red Snapper 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 from all data sources (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 Red Snapper.

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	414,163	0.40	1,289 (14)	11,195 (35)	855	1.00	1,289 (1)	11,195 (1)
1982	96,056	0.55	1,376 (14)	12,244 (19)	0	0.00	1,376 (0)	12,244 (0)
1983	115,439	0.37	1,611 (23)	16,283 (83)	21,042	0.71	1,611 (6)	16,283 (26)
1984	487,310	0.36	1,306 (40)	12,989 (131)	121,152	0.75	1,306 (9)	12,989 (36)
1985	557,006	0.46	1,960 (34)	17,443 (114)	139,498	0.74	1,960 (6)	17,443 (17)
1986	156,665	0.37	3,122 (27)	26,554 (97)	0	0.00	3,122 (0)	26,554 (0)
1987	122,532	0.25	2,924 (36)	25,934 (43)	162,190	0.83	2,924 (4)	25,934 (8)
1988	197,170	0.46	3,487 (43)	29,716 (53)	61,695	0.44	3,487 (6)	29,716 (7)
1989	251,295	0.32	4,494 (52)	39,433 (64)	57,047	0.52	4,494 (5)	39,433 (8)
1990	29,760	0.45	4,579 (21)	41,274 (24)	0	0.00	4,579 (0)	41,274 (0)
1991	72,485	0.40	4,684 (19)	43,139 (24)	45,726	0.53	4,684 (7)	43,139 (9)
1992	76,105	0.33	5,217 (39)	47,239 (63)	38,706	0.36	5,217 (18)	47,239 (52)
1993	30,167	0.35	4,550 (22)	41,219 (27)	178,013	0.69	4,550 (18)	41,219 (36)
1994	32,708	0.36	4,948 (31)	45,823 (39)	123,886	0.39	4,948 (18)	45,823 (34)
1995	17,240	0.39	4,539 (20)	41,454 (23)	87,866	0.40	4,539 (23)	41,454 (42)
1996	29,977	0.57	4,727 (15)	45,411 (18)	38,653	0.71	4,727 (9)	45,411 (17)
1997	16,734	0.45	5,221 (12)	49,353 (13)	16,909	0.39	5,221 (8)	49,353 (17)
1998	41,929	0.37	5,366 (26)	49,273 (33)	108,698	0.49	5,366 (23)	49,273 (36)
1999	99,202	0.23	4,985 (58)	47,010 (82)	324,770	0.23	4,985 (50)	47,010 (133)
2000	142,022	0.22	5,077 (66)	47,239 (93)	555,058	0.24	5,077 (79)	47,239 (183)
2001	135,065	0.27	5,876 (61)	59,743 (87)	535,301	0.29	5,876 (73)	59,743 (216)
2002	152,517	0.21	5,489 (69)	53,788 (92)	340,320	0.23	5,489 (76)	53,788 (218)
2003	60,691	0.24	6,353 (66)	56,962 (85)	404,733	0.34	6,353 (74)	56,962 (186)
2004	103,201	0.24	5,159 (59)	48,640 (80)	711,535	0.23	5,159 (70)	48,640 (212)
2005	53,373	0.26	5,229 (39)	49,498 (51)	129,834	0.23	5,229 (52)	49,498 (164)
2006	62,230	0.28	5,421 (42)	50,544 (55)	452,519	0.36	5,421 (56)	50,544 (180)
2007	60,086	0.33	5,375 (33)	51,078 (42)	963,575	0.24	5,375 (64)	51,078 (181)
2008	328,723	0.28	5,242 (58)	49,958 (80)	1,422,482	0.25	5,242 (67)	49,958 (232)
2009	421,979	0.27	5,123 (56)	45,420 (78)	960,896	0.25	5,123 (59)	45,420 (171)
2010	58	1.00	5,729 (1)	52,021 (1)	465,996	0.36	5,729 (54)	52,021 (105)
2011	0	0.00	5,227 (0)	46,130 (0)	251,243	0.47	5,227 (35)	46,130 (70)

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
2012	15,863	0.65	5,057 (11)	46,110 (14)	383,173	0.31	5,057 (40)	46,110 (112)
2013	54,477	0.80	4,544 (5)	38,622 (12)	210,275	0.32	4,544 (35)	38,622 (119)
2014	216,573	0.40	5,371 (29)	45,049 (94)	742,770	0.22	5,371 (100)	45,049 (316)
2015	2,035	0.73	5,573 (2)	47,021 (2)	1,308,760	0.36	5,573 (81)	47,021 (247)
2016	77	1.00	5,670 (1)	46,590 (1)	2,392,562	0.26	5,670 (83)	46,590 (249)
2017	159,490	0.75	5,828 (9)	50,353 (42)	1,616,781	0.26	5,828 (82)	50,353 (286)
2018	705,973	0.38	6,021 (19)	54,179 (146)	3,225,404	0.28	6,021 (100)	54,179 (384)
2019	221,755	0.46	6,092 (14)	54,230 (31)	1,965,576	0.24	6,092 (85)	54,230 (248)
2020	558,203	0.78	7,879 (16)	74,289 (62)	3,416,098	0.30	7,879 (142)	74,289 (389)
2021	90,049	0.41	7,563 (14)	66,418 (46)	2,186,909	0.20	7,563 (178)	66,418 (697)
2022	141,504	0.50	6,987 (12)	55,772 (48)	2,581,075	0.41	6,987 (139)	55,772 (474)
2023	415,633	0.49	7,096 (29)	55,799 (87)	2,072,548	0.23	7,096 (166)	55,799 (611)
2024	363,217	0.64	6,948 (15)	50,832 (52)	2,765,382	0.31	6,948 (146)	50,832 (647)

Table 6. Red Snapper landings in pounds whole weight (LBS) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode from all data sources (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 Red Snapper.

	Cbt		Priv		Total	
Year	LBS	CV	LBS	CV	LBS	CV
1981	124,724	0.59	846,497	0.51	971,221	0.46
1982	14,575	0.70	370,165	0.61	384,740	0.60
1983	109,519	0.56	41,167	0.98	150,686	0.64
1984	127,995	0.70	366,727	0.47	494,722	0.53
1985	211,962	0.62	1,363,274	0.60	1,575,236	0.47
1986	31,885	0.49	99,106	0.53	130,990	0.39
1987	107,654	0.47	137,163	0.35	244,818	0.27
1988	131,875	0.42	1,015,407	0.56	1,147,282	0.48
1989	55,901	0.59	257,318	0.43	313,219	0.33
1990	10,819	0.67	75,471	0.64	86,290	0.50
1991	130,488	0.51	155,156	0.68	285,643	0.42
1992	131,564	0.58	223,309	0.43	354,873	0.36
1993	30,456	0.37	178,968	0.45	209,424	0.38
1994	74,017	0.42	58,742	0.61	132,760	0.37
1995	44,681	0.50	16,517	0.62	61,198	0.41
1996	11,633	0.50	170,639	0.63	182,272	0.58
1997	29,047	0.64	15,016	0.63	44,063	0.49
1998	134,455	0.56	138,748	0.54	273,203	0.39
1999	103,745	0.37	251,887	0.36	355,633	0.26
2000	70,606	0.33	812,419	0.25	883,025	0.23
2001	92,614	0.31	871,060	0.32	963,674	0.28
2002	394,288	0.33	755,557	0.27	1,149,846	0.21
2003	129,937	0.28	393,814	0.35	523,751	0.25
2004	105,441	0.30	623,816	0.27	729,257	0.24
2005	121,113	0.36	242,951	0.37	364,064	0.27
2006	123,479	0.38	396,299	0.40	519,779	0.29
2007	50,280	0.36	492,353	0.38	542,632	0.34
2008	85,382	0.40	2,180,281	0.31	2,265,662	0.29
2009	127,855	0.53	2,862,173	0.29	2,990,028	0.27
2010	339	1.00	0	0.00	339	1.00
2011	0	0.00	0	0.00	0	0.00

	Cbt		Priv		Total	
Year	LBS	CV	LBS	CV	LBS	CV
2012	25,478	0.50	135,139	0.79	160,617	0.66
2013	9,340	0.85	537,715	0.83	547,055	0.81
2014	78,454	0.50	2,561,559	0.45	2,640,012	0.40
2015	4,297	1.00	7,544	1.00	11,841	0.74
2016	448	1.00	0	0.00	448	1.00
2017	28,991	0.73	1,017,394	0.78	1,046,384	0.75
2018	27,204	0.67	5,783,748	0.43	5,810,952	0.38
2019	243,857	0.90	2,055,295	0.56	2,299,153	0.46
2020	37,060	0.61	4,519,858	0.78	4,556,917	0.78
2021	53,519	0.68	821,032	0.46	874,551	0.42
2022	15,870	0.64	1,155,780	0.52	1,171,650	0.51
2023	82,560	0.48	3,506,663	0.52	3,589,223	0.49
2024	38,832	0.79	3,269,371	0.66	3,308,202	0.64

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

	Cbt					Priv				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	1 (1)	0.7	0.7	0.0	0.7	35 (11)	0.4	2.5	2.3	9.0
1982	0 (0)	0.0	0.0	0.0	0.0	39 (14)	0.2	3.8	4.9	21.9
1983	12 (5)	0.2	4.3	4.5	11.7	14 (4)	0.2	4.9	9.8	38.0
1984	64 (11)	0.2	1.9	4.1	28.8	67 (15)	0.4	1.4	0.7	2.7
1985	10 (2)	0.9	1.9	0.5	2.4	75 (23)	0.7	2.7	1.6	5.7
1986	220 (80)	0.2	0.5	0.8	6.7	39 (17)	0.4	1.1	0.7	3.3
1987	110 (22)	0.5	2.6	2.1	10.9	68 (21)	0.4	2.2	1.5	5.6
1988	2 (2)	1.6	1.9	0.3	2.1	11 (5)	0.4	0.9	0.4	1.6
1989	103 (35)	0.4	3.8	2.3	8.6	84 (29)	0.2	2.2	4.6	38.1
1990	65 (15)	0.5	2.6	3.0	12.1	11 (8)	0.4	6.8	8.5	23.7
1991	66 (18)	0.7	2.9	2.4	14.6	14 (6)	0.9	5.1	4.8	17.6
1992	177 (49)	0.7	4.4	4.2	40.6	30 (12)	1.1	5.1	3.5	12.3
1993	44 (17)	0.7	9.4	8.1	28.4	15 (10)	0.4	6.7	5.0	14.6
1994	72 (29)	0.7	8.2	6.5	29.0	19 (10)	0.4	3.9	6.1	25.1
1995	62 (20)	0.4	3.9	3.8	20.6	3 (3)	5.5	8.0	2.6	10.6
1996	19 (9)	0.4	4.7	4.8	14.6	15 (9)	1.4	7.8	4.4	19.0
1997	47 (10)	0.5	2.4	3.6	14.9	4 (3)	1.2	10.8	9.4	23.4
1998	65 (23)	0.7	5.5	5.9	27.6	15 (10)	1.0	6.1	5.7	23.4
1999	227 (57)	0.4	2.9	4.0	23.5	61 (25)	1.0	4.6	5.0	26.3
2000	144 (55)	0.6	5.6	5.1	23.5	86 (38)	0.7	6.9	3.6	16.2
2001	124 (49)	2.3	8.2	6.2	38.9	81 (37)	1.1	6.7	4.8	26.1
2002	264 (61)	2.6	7.2	4.0	27.2	79 (31)	4.3	8.1	2.6	13.5
2003	213 (61)	1.2	8.4	5.6	30.1	29 (21)	0.9	9.9	4.5	15.3
2004	152 (49)	3.2	7.8	4.3	25.1	53 (31)	2.1	6.9	2.9	16.0
2005	101 (36)	2.9	8.1	4.4	25.1	28 (15)	0.9	6.8	4.7	19.5
2006	119 (40)	0.2	7.9	5.6	27.2	26 (15)	1.1	11.1	10.1	41.9
2007	56 (20)	0.2	7.2	4.8	23.1	34 (22)	1.3	9.8	6.9	30.7
2008	103 (30)	3.9	7.2	4.8	32.8	126 (50)	1.8	6.8	4.3	32.8
2009	110 (29)	3.3	7.2	3.4	24.8	167 (49)	3.8	7.1	3.4	24.8
2010	1 (1)	2.3	2.3	0.0	2.3	0 (0)	0.0	0.0	0.0	0.0
2011	0 (0)	0.0	0.0	0.0	0.0	0 (0)	0.0	0.0	0.0	0.0

	Cbt					Priv				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2012	45 (9)	2.1	10.2	5.4	26.0	8 (5)	1.3	9.6	5.1	14.1
2013	4 (3)	3.5	7.1	3.7	12.3	12 (9)	1.4	11.0	4.6	15.1
2014	136 (34)	2.7	13.8	4.1	22.0	138 (60)	1.3	11.6	5.5	21.2
2015	3 (1)	14.2	14.5	0.4	14.9	1 (1)	19.8	19.8	0.0	19.8
2016	1 (1)	1.3	1.3	0.0	1.3	0 (0)	0.0	0.0	0.0	0.0
2017	18 (10)	1.3	7.0	3.9	15.0	74 (32)	1.7	5.9	2.8	14.4
2018	59 (12)	0.4	9.4	6.3	24.0	259 (134)	0.4	8.2	4.9	22.6
2019	48 (10)	0.7	11.2	4.7	18.6	52 (21)	0.8	10.7	6.1	24.3
2020	33 (9)	1.5	10.4	5.5	21.9	136 (53)	0.7	7.6	5.2	24.3
2021	97 (21)	1.5	10.3	5.3	21.2	66 (25)	1.5	8.9	6.2	22.8
2022	16 (11)	4.9	6.9	3.4	19.0	74 (37)	1.3	8.0	4.9	23.1
2023	86 (28)	2.4	11.0	4.4	21.0	155 (59)	0.6	8.2	5.4	20.7
2024	19 (15)	5.0	9.8	3.8	14.8	77 (37)	0.6	9.4	4.1	19.8

Table 8. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Red Snapper 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 weights.

	Weight				
Year	N	Min	Avg	SD	Max
1981	36 (12)	0.4	2.5	2.3	9.0
1982	39 (14)	0.2	3.8	4.9	21.9
1983	26 (9)	0.2	4.7	7.7	38.0
1984	131 (26)	0.2	1.6	2.9	28.8
1985	85 (25)	0.7	2.6	1.5	5.7
1986	259 (97)	0.2	0.6	0.8	6.7
1987	178 (43)	0.4	2.5	1.9	10.9
1988	13 (7)	0.4	1.0	0.5	2.1
1989	187 (64)	0.2	3.1	3.6	38.1
1990	76 (23)	0.4	3.2	4.5	23.7
1991	80 (24)	0.7	3.3	3.0	17.6
1992	207 (61)	0.7	4.5	4.1	40.6
1993	59 (27)	0.4	8.8	7.5	28.4
1994	91 (39)	0.4	7.3	6.6	29.0
1995	65 (23)	0.4	4.1	3.9	20.6
1996	34 (18)	0.4	6.1	4.8	19.0
1997	51 (13)	0.5	3.1	4.7	23.4
1998	80 (33)	0.7	5.6	5.9	27.6
1999	288 (82)	0.4	3.2	4.3	26.3
2000	230 (93)	0.6	6.1	4.7	23.5
2001	205 (86)	1.1	7.6	5.7	38.9
2002	343 (92)	2.6	7.4	3.7	27.2
2003	242 (82)	0.9	8.6	5.5	30.1
2004	205 (80)	2.1	7.6	4.0	25.1
2005	129 (51)	0.9	7.8	4.5	25.1
2006	145 (55)	0.2	8.5	6.7	41.9
2007	90 (42)	0.2	8.2	5.8	30.7
2008	229 (80)	1.8	7.0	4.5	32.8
2009	277 (78)	3.3	7.1	3.4	24.8
2010	1 (1)	2.3	2.3	0.0	2.3
2011	0 (0)	0.0	0.0	0.0	0.0

	Weight				
Year	N	Min	Avg	SD	Max
2012	53 (14)	1.3	10.1	5.3	26.0
2013	16 (12)	1.4	10.0	4.6	15.1
2014	274 (94)	1.3	12.7	5.0	22.0
2015	4 (2)	14.2	15.8	2.7	19.8
2016	1 (1)	1.3	1.3	0.0	1.3
2017	92 (42)	1.3	6.1	3.1	15.0
2018	318 (146)	0.4	8.4	5.2	24.0
2019	100 (31)	0.7	10.9	5.5	24.3
2020	169 (62)	0.7	8.2	5.3	24.3
2021	163 (46)	1.5	9.7	5.7	22.8
2022	90 (48)	1.3	7.8	4.7	23.1
2023	241 (87)	0.6	9.2	5.2	21.0
2024	96 (52)	0.6	9.5	4.0	19.8

Table 9. Estimated average weights of landed Red Snapper in pounds whole weight (WGT) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode from all data sources (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.

	Cbt			Priv			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N
1981	2.05	0.00	1 (1)	2.40	0.24	11 (35)	2.35	0.25	12 (36)
1982				4.02	0.28	14 (39)	4.01	0.28	14 (39)
1983	1.36	0.47	5 (12)	1.18	0.86	4 (14)	1.31	0.57	9 (26)
1984	1.10	0.57	11 (64)	0.99	0.12	15 (67)	1.02	0.41	26 (131)
1985	1.41	0.16	2 (10)	3.35	0.12	23 (75)	2.83	0.11	25 (85)
1986	0.59	0.15	80 (220)	0.97	0.17	17 (39)	0.84	0.12	97 (259)
1987	2.59	0.15	22 (110)	1.69	0.14	21 (68)	2.00	0.11	43 (178)
1988	5.82	0.12	2 (2)	5.82	0.20	5 (11)	5.82	0.17	7 (13)
1989	2.17	0.09	35 (103)	1.14	0.24	29 (84)	1.25	0.10	64 (187)
1990	1.70	0.25	15 (65)	3.23	0.39	8 (11)	2.90	0.23	23 (76)
1991	3.56	0.15	18 (66)	4.34	0.31	6 (14)	3.94	0.14	24 (80)
1992	3.82	0.18	49 (177)	5.36	0.21	12 (30)	4.66	0.14	61 (207)
1993	8.38	0.18	17 (44)	6.74	0.24	10 (15)	6.94	0.15	27 (59)
1994	6.65	0.10	29 (72)	2.72	0.38	10 (19)	4.06	0.11	39 (91)
1995	3.38	0.17	20 (62)	4.09	0.19	3 (3)	3.55	0.14	23 (65)
1996	6.08	0.24	9 (19)	6.08	0.19	9 (15)	6.08	0.15	18 (34)
1997	2.46	0.32	10 (47)	3.06	0.16	3 (4)	2.63	0.23	13 (51)
1998	6.19	0.14	23 (65)	6.86	0.28	10 (15)	6.52	0.14	33 (80)
1999	3.17	0.14	57 (227)	3.79	0.20	25 (61)	3.58	0.12	82 (288)
2000	5.83	0.09	55 (144)	6.25	0.07	38 (86)	6.22	0.06	93 (230)
2001	7.09	0.11	49 (124)	7.14	0.10	37 (81)	7.13	0.08	86 (205)
2002	6.86	0.04	61 (264)	7.95	0.05	31 (79)	7.54	0.03	92 (343)
2003	6.40	0.08	61 (213)	9.75	0.11	21 (29)	8.63	0.06	82 (242)
2004	7.76	0.06	49 (152)	6.96	0.05	31 (53)	7.07	0.04	80 (205)
2005	7.73	0.07	36 (101)	6.44	0.19	15 (28)	6.82	0.07	51 (129)
2006	7.69	0.09	40 (119)	8.58	0.21	15 (26)	8.35	0.08	55 (145)
2007	7.65	0.11	20 (56)	9.20	0.14	22 (34)	9.03	0.09	42 (90)
2008	7.47	0.07	30 (103)	6.87	0.10	50 (126)	6.89	0.07	80 (229)
2009	6.58	0.08	29 (110)	7.11	0.07	49 (167)	7.09	0.05	78 (277)

	Cbt			Priv			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N
2010	5.82	0.00	1 (1)				5.82	0.00	1 (1)
2011									
2012	10.40	0.12	9 (45)	10.07	0.33	5 (8)	10.13	0.13	14 (53)
2013	10.04	0.35	3 (4)	10.04	0.17	9 (12)	10.04	0.15	12 (16)
2014	13.77	0.05	34 (136)	12.15	0.05	60 (138)	12.19	0.04	94 (274)
2015	5.82	0.00	1 (3)	5.82	0.00	1 (1)	5.82	0.16	2 (4)
2016	5.82	0.00	1 (1)				5.82	0.00	1 (1)
2017	6.95	0.13	10 (18)	6.55	0.06	32 (74)	6.56	0.06	42 (92)
2018	9.89	0.17	12 (59)	8.22	0.05	134 (259)	8.23	0.05	146 (318)
2019	10.87	0.08	10 (48)	10.31	0.10	21 (52)	10.37	0.07	31 (100)
2020	11.47	0.18	9 (33)	8.14	0.08	53 (136)	8.16	0.08	62 (169)
2021	10.08	0.08	21 (97)	9.69	0.13	25 (66)	9.71	0.08	46 (163)
2022	6.94	0.17	11 (16)	8.30	0.10	37 (74)	8.28	0.09	48 (90)
2023	11.61	0.06	28 (86)	8.58	0.09	59 (155)	8.64	0.06	87 (241)
2024	9.72	0.10	15 (19)	9.10	0.05	37 (77)	9.11	0.05	52 (96)

Table 10. Recreational Fishing Effort (in angler trips) for South Atlantic anglers by mode and year from all data sources (MRIP). These effort estimates depict all (general) recreational fishing activity in the South Atlantic and are not specific to Red Snapper.

Year	Cbt	Priv	Total
1981	450,575	10,151,055	10,601,630
1982	438,618	11,266,289	11,704,907
1983	490,020	10,839,734	11,329,754
1984	569,709	11,885,063	12,454,772
1985	585,830	12,493,266	13,079,096
1986	665,307	13,879,891	14,545,198
1987	573,922	13,811,587	14,385,509
1988	526,844	12,295,922	12,822,766
1989	584,673	13,001,958	13,586,631
1990	505,299	12,455,745	12,961,044
1991	418,189	13,146,392	13,564,581
1992	451,955	13,772,158	14,224,113
1993	463,765	14,274,232	14,737,997
1994	479,332	14,541,089	15,020,421
1995	473,223	13,320,502	13,793,725
1996	474,841	14,131,478	14,606,319
1997	476,893	14,610,504	15,087,397
1998	473,875	14,899,591	15,373,466
1999	462,059	15,625,047	16,087,106
2000	394,486	18,655,014	19,049,500
2001	444,747	17,794,419	18,239,166
2002	510,894	19,221,716	19,732,610
2003	498,200	20,494,552	20,992,752
2004	492,025	19,518,599	20,010,624
2005	477,165	21,345,611	21,822,776
2006	448,026	23,178,582	23,626,608
2007	477,564	23,921,087	24,398,651
2008	390,837	21,567,723	21,958,560
2009	404,846	23,531,866	23,936,712
2010	349,615	25,415,219	25,764,834
2011	360,173	23,390,623	23,750,796
2012	362,434	20,785,727	21,148,161
2013	341,643	20,494,539	20,836,182
2014	414,547	22,193,742	22,608,289

Year	Cbt	Priv	Total
2015	473,729	21,753,358	22,227,087
2016	500,201	21,252,299	21,752,500
2017	514,533	21,505,638	22,020,171
2018	523,437	22,890,479	23,413,916
2019	578,473	20,753,564	21,332,037
2020	578,524	22,836,975	23,415,499
2021	730,011	21,851,089	22,581,100
2022	596,130	22,615,383	23,211,513
2023	771,177	22,799,040	23,570,217
2024	707,687	23,387,034	24,094,721

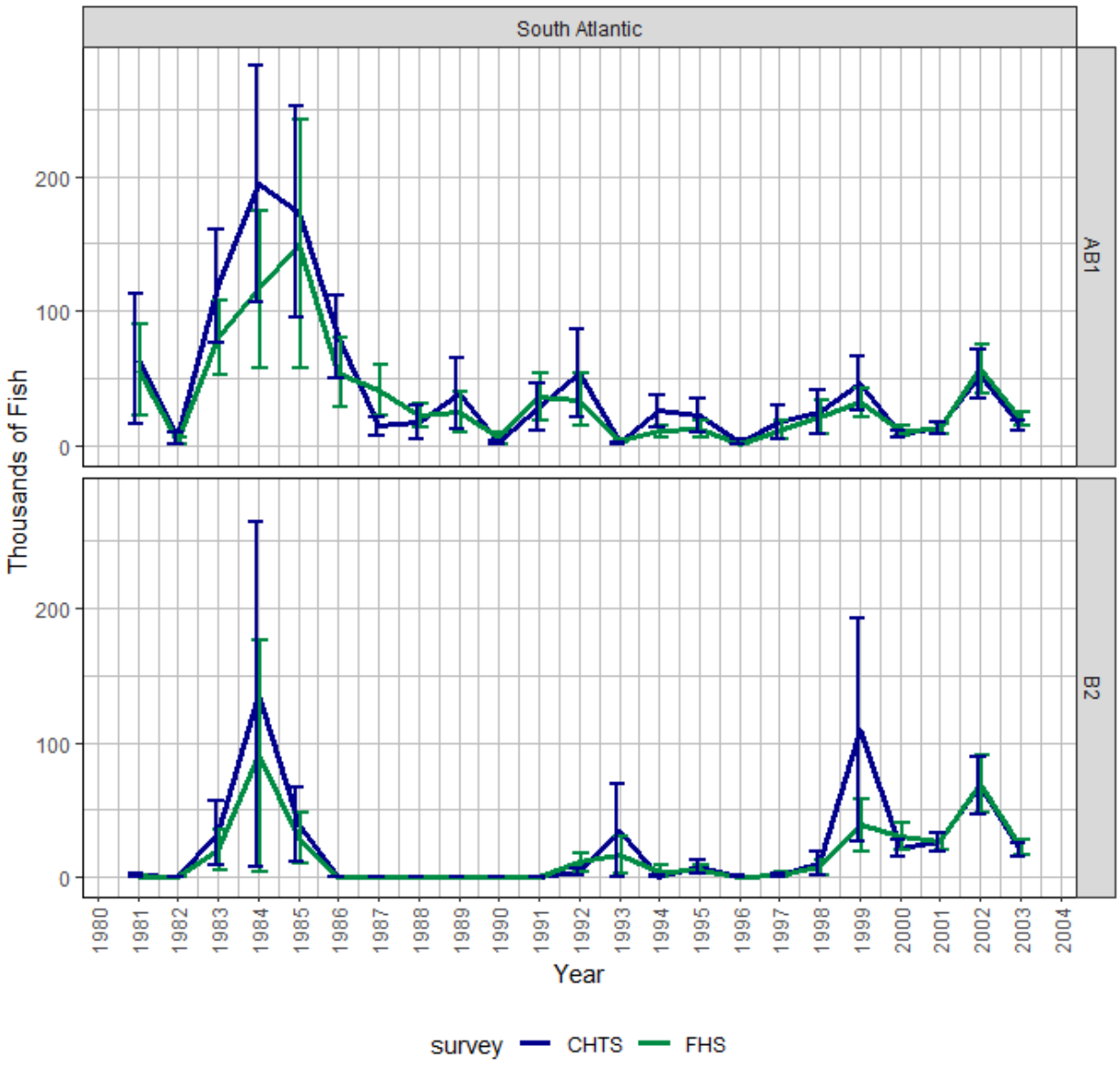

Figure 1. *Comparison of MRIP charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Red Snapper from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the South Atlantic between 1981 and 2003 (MRIP). The Charterboat calibration approach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

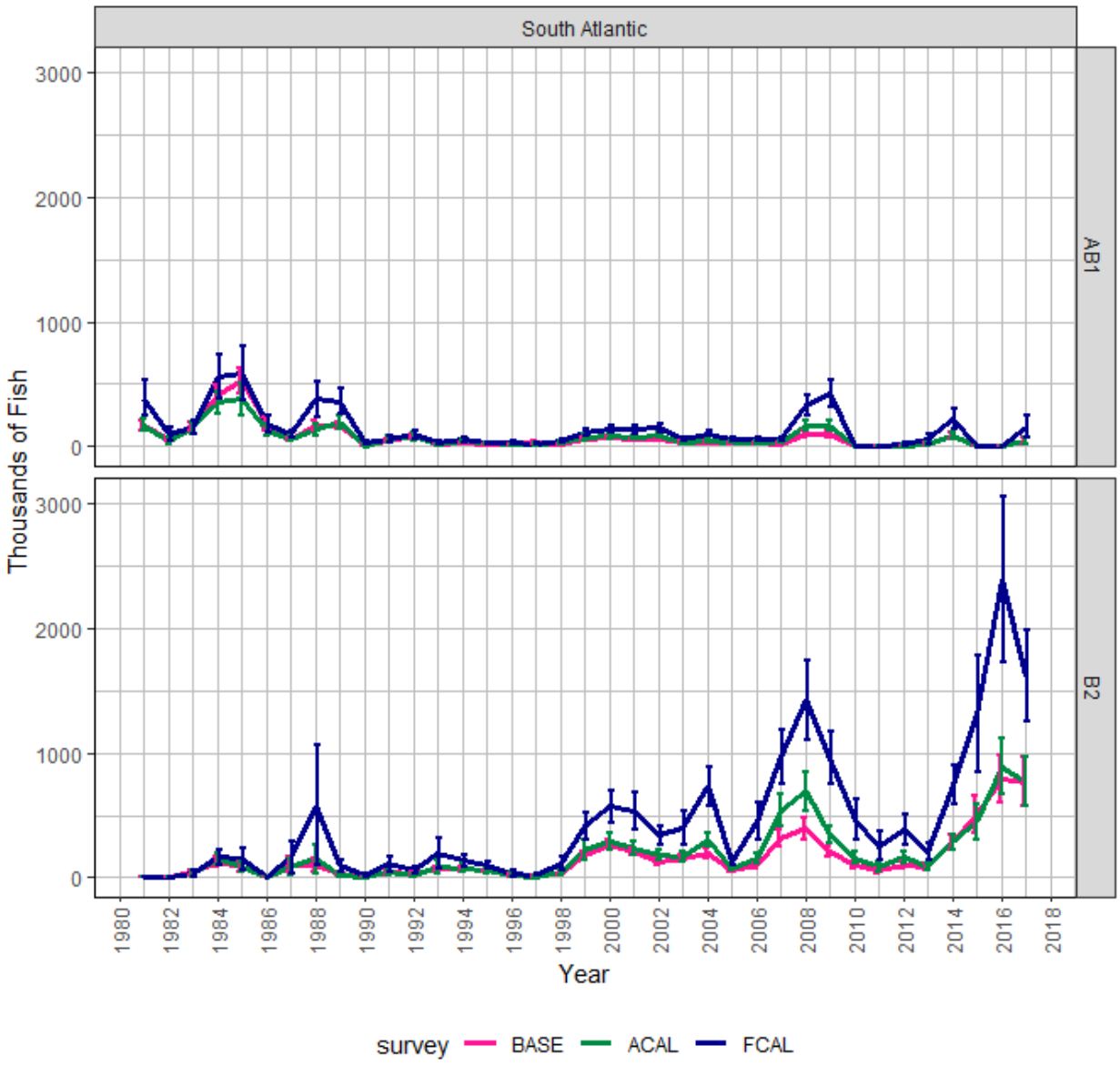

Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) estimates for Red Snapper in the South Atlantic between 1981 and 2017 (NMFS pers comm). The Headboat and shore modes are also included as uncertainty estimates for catch across multiple modes are only available when all modes are selected.*

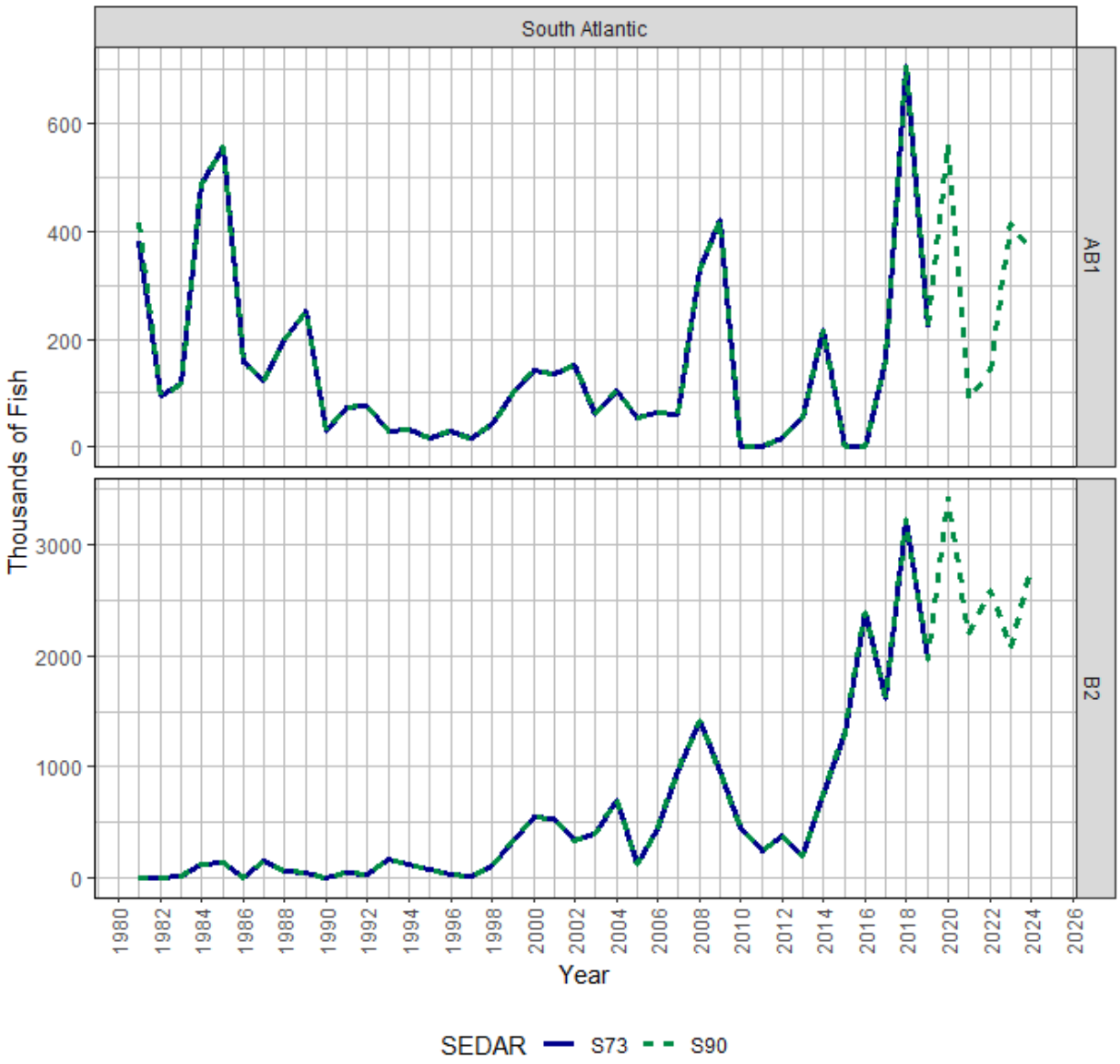

Figure 3. *Comparison of total general recreational landings (AB1) and discard estimates (B2) for South Atlantic Red Snapper between SEDAR 90 and SEDAR 73, the terminal years of which are 2024 and 2019 respectively.*

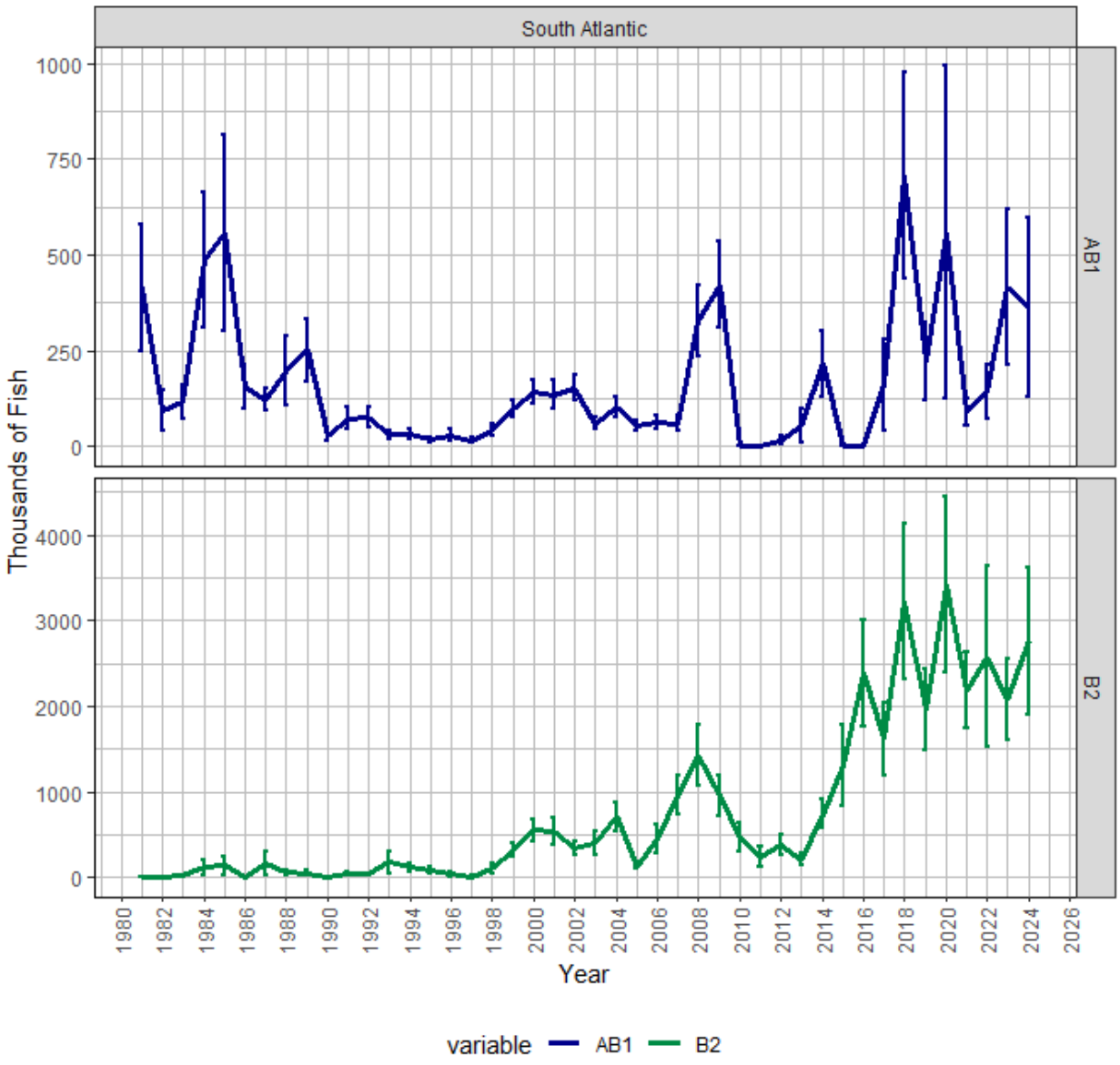

Figure 4. *Annual landings (AB1) and discard (B2) estimates with standard error intervals, in thousands of fish, for South Atlantic Red Snapper between 1981 to 2024.*

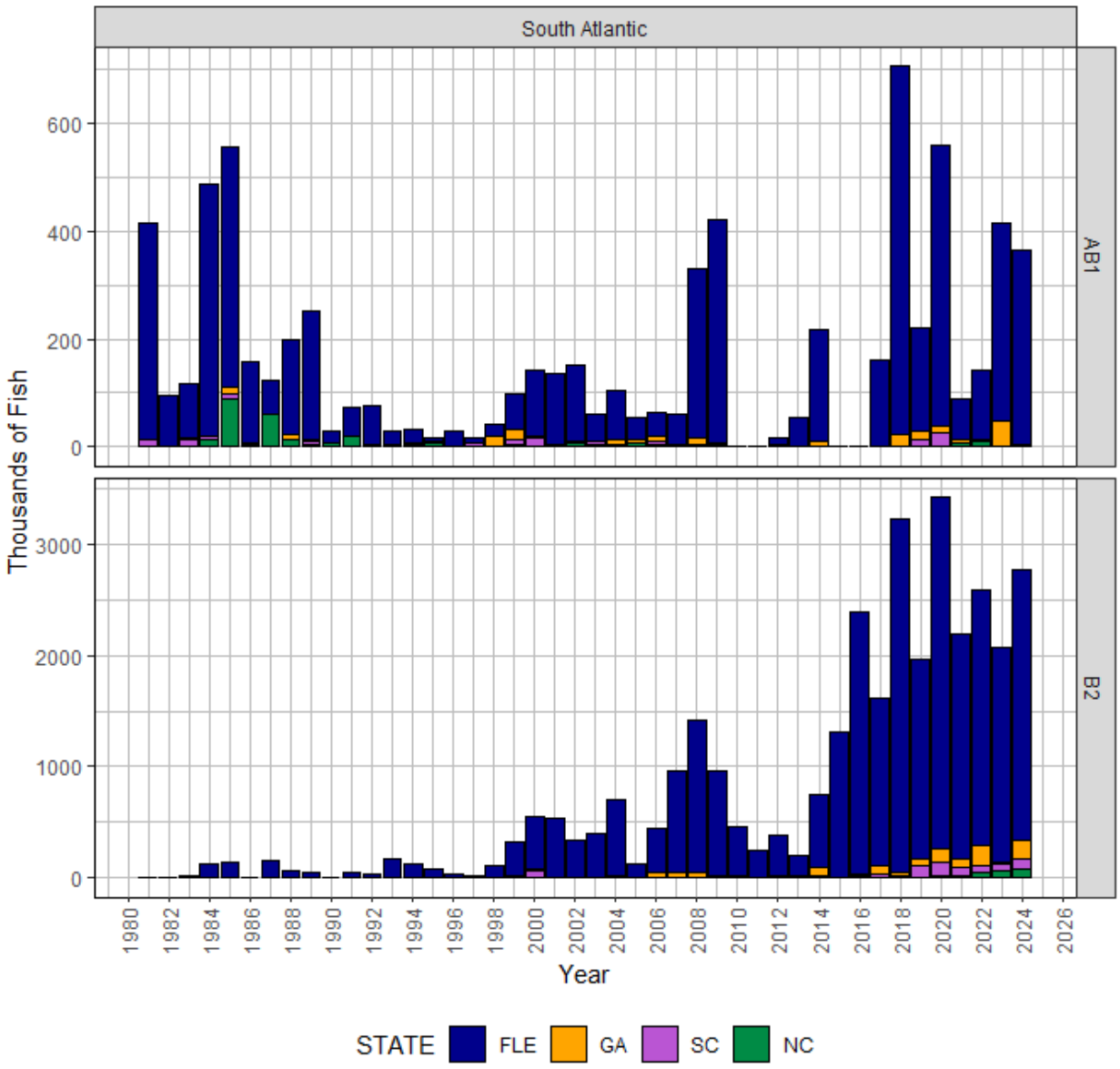

Figure 5a. *Annual Red Snapper landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2024 from all data sources (MRIP).*

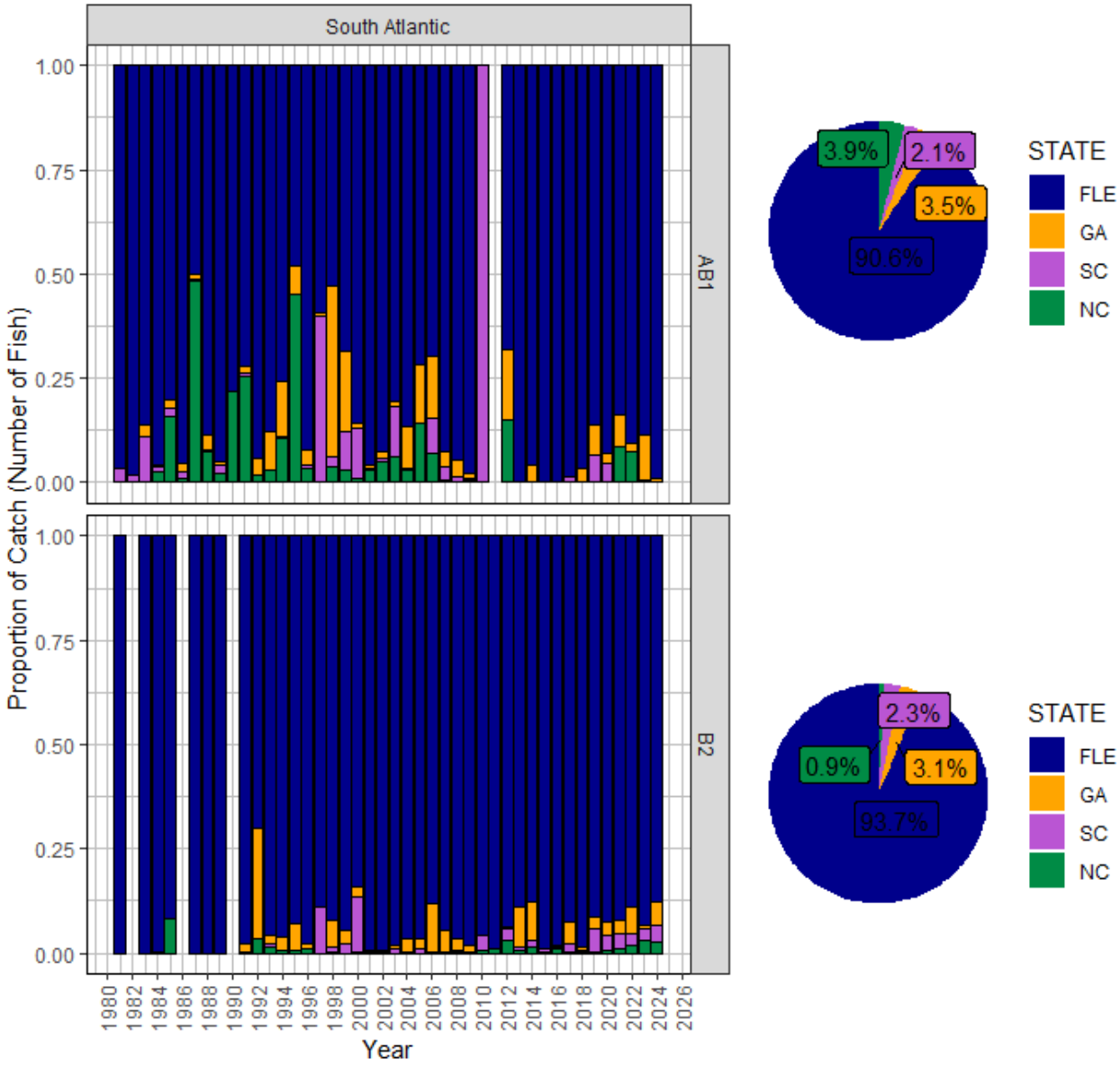

Figure 5b. *Proportion of Red Snapper landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2024 from all data sources (MRIP).*

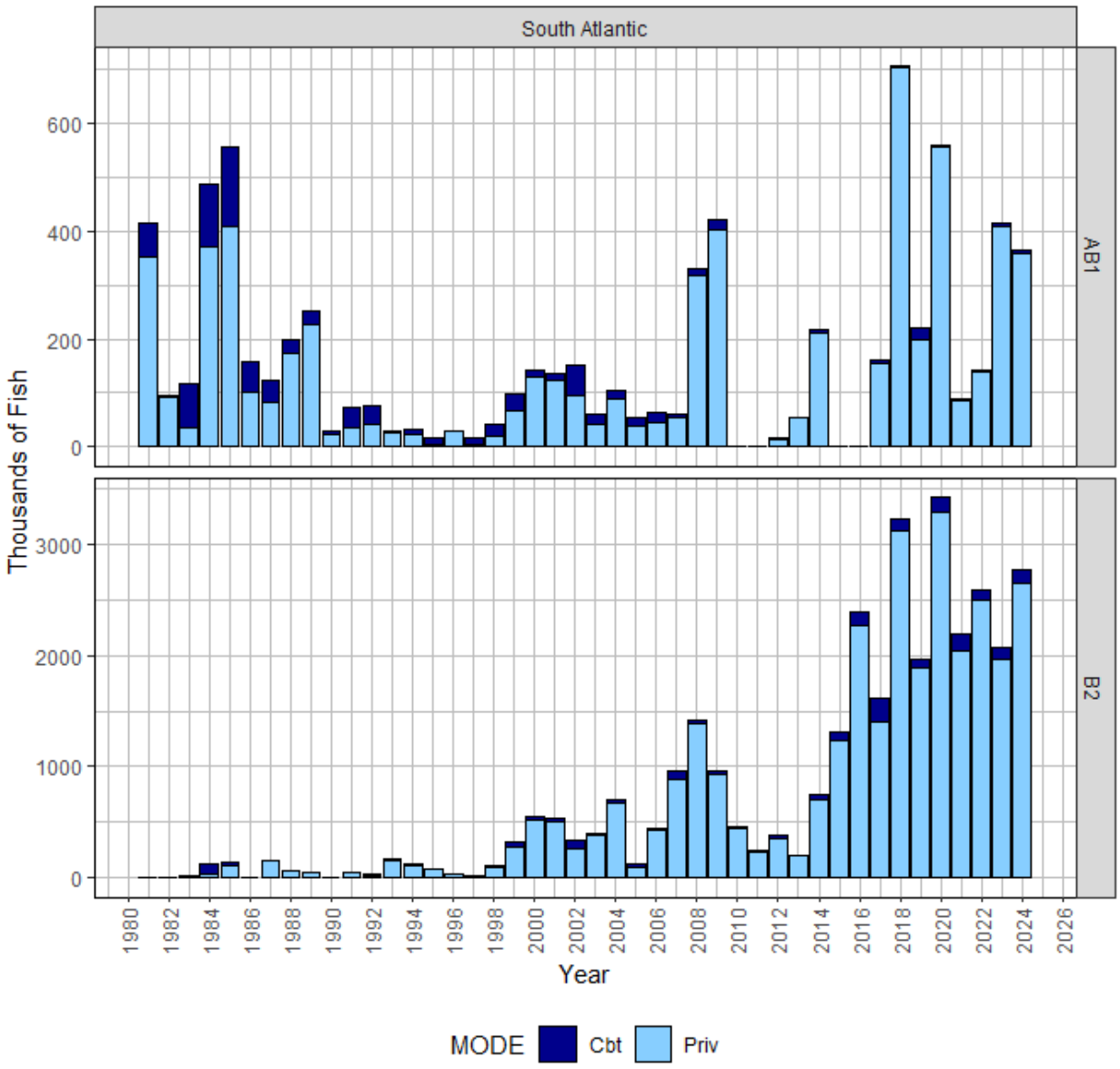

Figure 6a. *Annual Red Snapper landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2024 from all data sources (MRIP).*

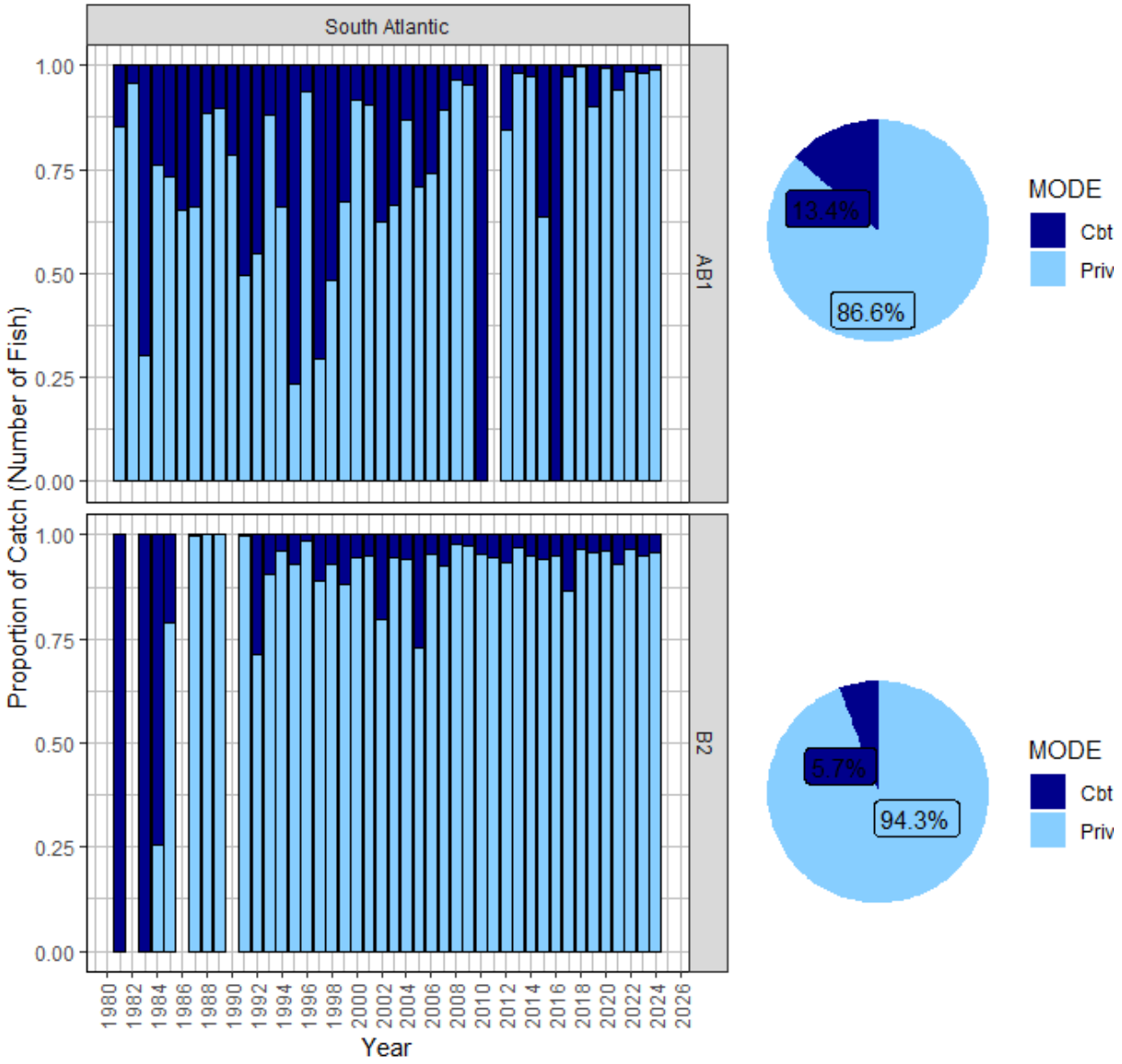

Figure 6b. *Proportion of Red Snapper landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2024 from all data sources (MRIP).*

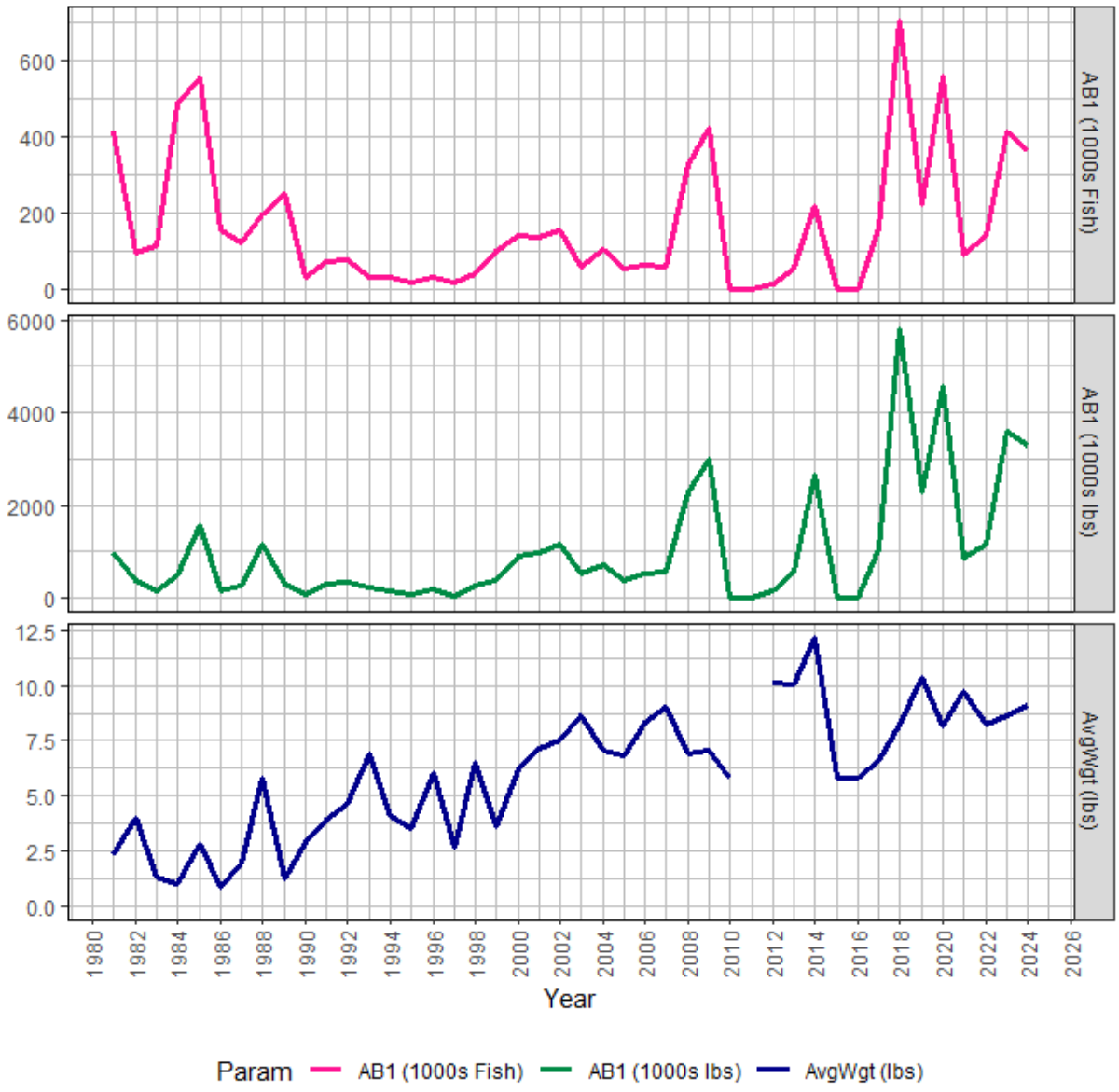

Figure 7. *Estimates of annual landings for Red Snapper in the South Atlantic from all data sources (MRIP): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). See Appendix for average weight calculation methods.*

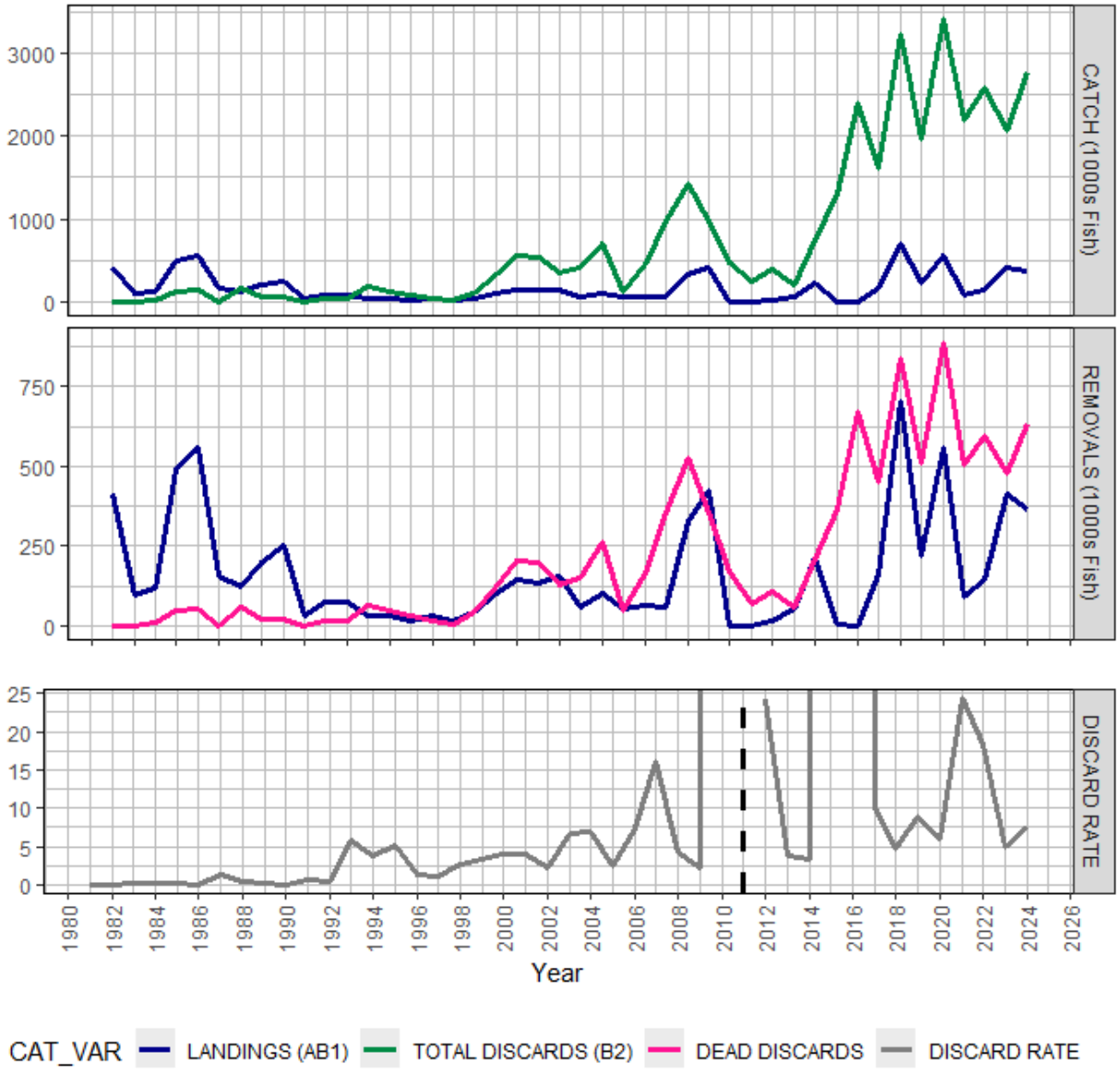

Figure 8. *Time series of general recreational landings (AB1) and discards (B2), in thousands of fish (top panel), and the associated discard rate (B2:AB1) (bottom panel) for South Atlantic Red Snapper from all data sources (MRIP). Years where (select) management actions were implemented are identified by a dashed black line (2011 - Snapper-Grouper Amendment 17A). Dead discards (middle panel) were calculated by applying the assumed discard mortality rates from the previous assessment.*

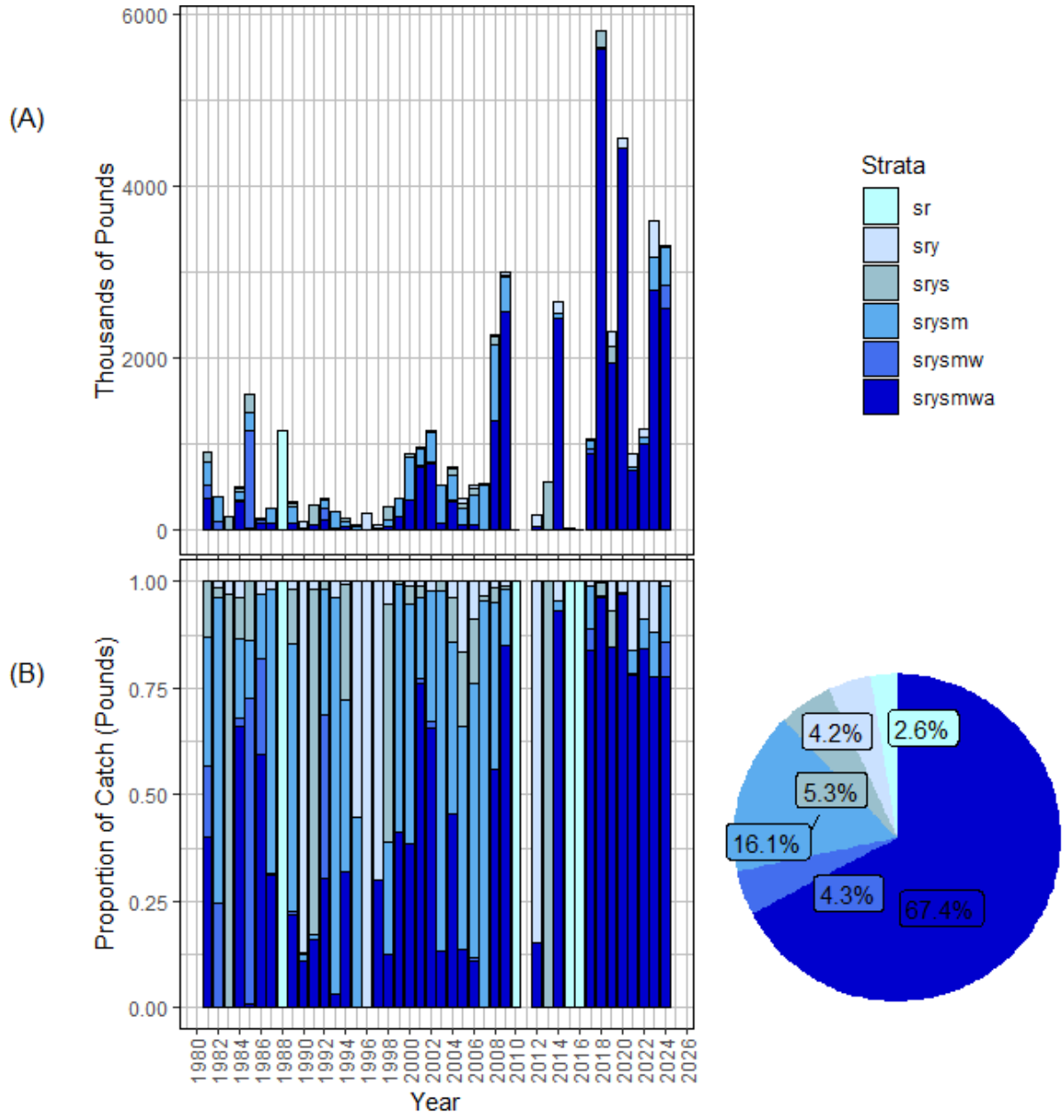

Figure 9. *Annual landings estimates of South Atlantic Red Snapper in thousands of pounds whole weight from all data sources (MRIP) by hierarchy level, defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata 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)

	Cbt		Priv	
Wave	IMP	RAW	RAW	IMP
2	36	24	16	10
3	10	30	18	19
4		69	97	
5		35	13	
6		16	20	
1			6	

(B)

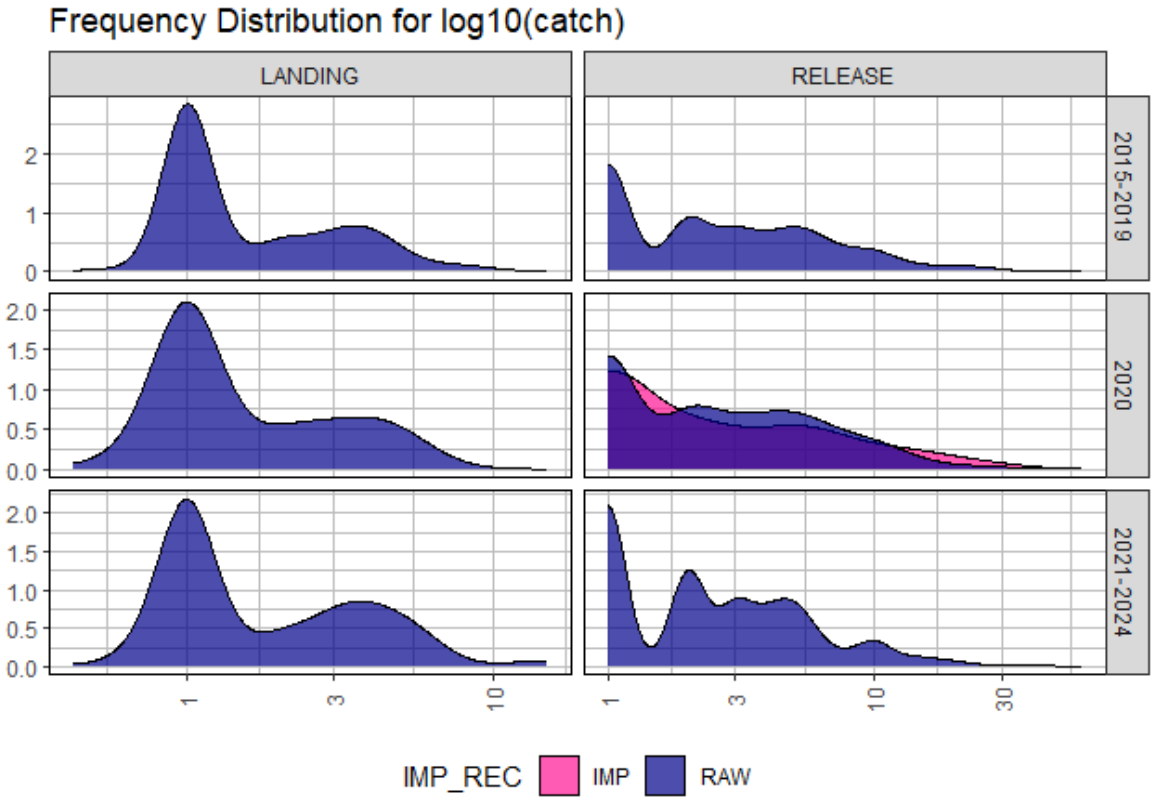

Figure 10. *COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted South Atlantic Red Snapper. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2021-2024), in raw 2020 APAIS data, and in 2020 imputations. Refer to Cody (2021) for more information on COVID data gaps in MRIP.*

Appendix A

Additional Details of Survey Data and SEFSC Estimation

- MRIP 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; 2000 for eastern Florida and 2004 for all Atlantic states north of Florida).
  - Papacostas and Foster (2021) provide descriptions of the approaches used by the Office of Science and Technology to calibrate MRIP (1) effort estimates derived from the legacy Coastal Household Telephone Survey (CHTS) into FES units for the private and shore modes and (2) catch rate estimates between the original and redesigned APAIS for all modes.
  - SEFSC calibrations of catch and effort estimates between CHTS and FHS units are calculated for 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 7-9). For SEDAR 90 Red Snapper, this includes any weights heavier than 52.668 pounds.
- SEFSC Estimates derived using SEDAR best practices (SEDAR-PW-07):
  - The MRFSS survey began in wave2 of 1981. The preferred method was applied to fill-in this (1981 wave1) MRIP data gap, by which the proportion of the wave1 estimate to that from other waves (2-6) in years 1982-1984 (by fishing mode and area) was multiplied by the total estimate from waves 2-6 in 1981. This approach was used to impute both the catch and effort estimates for this strata. MRIP sampling is not conducted in wave1 north of Florida because fishing effort is generally very low. Wave1 catch in 1981 is therefore assumed negligible in these states and was not imputed.
  - To ensure sampling can support MRIP estimates at finer stratifications than for which the survey was designed, (sub-state) domain estimates are only generated for established geographic domains. For Florida, this includes the sub-state domains of Florida in the FHS (4 = southeastern Florida, Miami-Dade to Indian River; 5 = northeastern Florida, Brevard to Nassau). For North Carolina, this includes domains north of Cape Hatteras (Cape Hatteras north to the NC/VA border) and south of Cape Hatteras (Cape Hatteras south to the NC/SC border).

- 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).