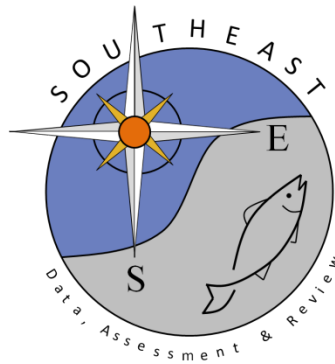


A ratio-based method for calibrating estimates of total landings (numbers and pounds of fish), releases (numbers of fish), and total trips from MRIP-FCAL to SRFS for Red Snapper (*Lutjanus campechanus*) in the South Atlantic

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SEDAR90-DW-19

April 2025



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Please cite this document as:

Ramsay, Chloe. 2025. A ratio-based method for calibrating estimates of total landings (numbers and pounds of fish), releases (numbers of fish), and total trips from MRIP-FCAL to SRFS for Red Snapper (*Lutjanus campechanus*) in the South Atlantic. SEDAR90-DW-19. SEDAR, North Charleston, SC. 15 pp.

A ratio-based method for calibrating estimates of total landings (numbers and pounds of fish), releases (numbers of fish), and total trips from MRIP-FCAL to SRFS for Red Snapper (*Lutjanus campechanus*) in the South Atlantic.

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In preparation for

SEDAR 90 South Atlantic Red Snapper

April 11, 2025

Background

In response to the need for more precise estimates of recreational catch for reef fishes, particularly from private boats, the Florida Fish and Wildlife Conservation Commission developed and implemented a new survey that runs side-by-side with the historic Marine Recreational Information Program (MRIP). The MRIP is a general survey of all saltwater recreational fishing in both state and federal waters, whereas the State Reef Fish Survey (SRFS) is a supplemental, more specialized survey that directly targets participants in the reef fish fishery to collect information on effort and catch. The SRFS is the result of a decade of development and testing in Florida, in collaboration with independent statistical consultants and NOAA Fisheries scientists. The survey provides year-round, monthly estimates of fishing effort, landings, and discards for a suite of reef fish species commonly targeted by recreational anglers fishing from private boats in Florida. Initially named the Gulf Reef Fish Survey (GRFS), the methodology was implemented in May 2015 and was only conducted on the west coast of Florida, north of Monroe County (Fig. 1). In 2018, the survey design and estimation methods were peer-reviewed and subsequently certified by NOAA Fisheries as statistically valid and suitable for use (SRFS Certification Memo and design documentation, available online: <https://www.fisheries.noaa.gov/recreational-fishing-data/transitioning-new-recreational-fishing-survey-designs>).

The SRFS runs concurrently with the MRIP survey in Florida, which has provided vital statistics on recreational fishing effort and catch in the Gulf of America and Atlantic Ocean off the coast of Florida since 1981. The SRFS and MRIP surveys use independent methods to estimate fishing effort (angler trips). However, catch estimates derived from each method are not completely independent. To estimate catch-per-unit-effort (CPUE), MRIP uses data collected in the Access Point Angler Intercept Survey (APAIS), and SRFS uses a combination of data from the APAIS and supplemental reef fish angler intercepts. Assignments for both intercept surveys are drawn together so that sample weights are compatible (Foster, 2018).

Previous stock assessments of Florida-centric species such as Gag (SEDAR 72) and Red Grouper (SEDAR 88) in the Gulf of America and Southeast Mutton (SEDAR 79) and Yellowtail Snapper (SEDAR 96) have incorporated a time series of MRIP estimates converted to SRFS currency for historic estimates of landings and discards from recreational private boats and SRFS estimates for recent years (Cross et al., 2020a; Ramsay et al., 2024a-c). The method was developed to calibrate historic MRIP-FCAL estimates to SRFS currency and was peer-reviewed by NOAA Office of Science and Technology (OS&T) statistical consultants and approved for use (Cross et al. 2020a; Ramsay, NOAA OS&T et al., 2024). The method is used herein to calibrate MRIP estimates to SRFS currency for South Atlantic Red Snapper, which will facilitate the use of SRFS estimates in this assessment.

Objectives

The objective is to develop conversion factors that may be applied to annual, fully calibrated MRIP estimates, and produce a historic time series in the same currency as the SRFS for Red Snapper (*Lutjanus campechanus*) in the South Atlantic.

Methods

This analysis used private boat mode recreational estimates of total landings (numbers and pounds of fish) and releases (numbers) derived from SRFS and MRIP from January 2021 through December 2024. Overlapping estimates from the first six months of SRFS implementation (July-December 2020) were not included in this analysis due to challenges related to the global pandemic, which coincided with initial expansion of the survey. To our knowledge there are no biases in 2021-2024 data.

We did not apply calibrations at a fine scale back in time (*i.e.*, by month or area fished), as neither survey was designed to generate precise estimates at this scale. Instead, we quantified the overall differences between SRFS and FCAL estimates across the years over which the two surveys overlap. This allowed for a single calibration factor to be applied to FCAL estimates back in time for landings and releases. Separate conversion factors are provided for landings in numbers, landings in pounds, and releases in numbers.

All MRIP-FCAL estimates used in this calibration were generated by the NOAA Southeast Fisheries Science Center. MRIP-FCAL estimates were generated for the whole assessment region and not separated by state. Landings and releases in Florida make up 95% of the total landings and releases. Therefore, in order to generate estimates for Florida for use in this calibration, the additional Red Snapper landed and released in states outside of Florida were subtracted from the whole estimate for each year. PSE values were used as provided. FWC-FWRI, stock assessment analysts, and representatives from the Southeast Fisheries Science Center decided that removal of the data from other states would change PSE values very minimally or not at all due to the extremely small proportion of landings and releases that came from other states. Variances for use in this calibration process were back-calculated using the PSE and estimates values.

To assess overall differences between SRFS and FCAL estimates the estimates (\hat{E}) and variances (\hat{V}) for each estimation method (m : SRFS, FCAL) were summed across years (y), two-month waves (w), and areas fished (a : federal or state waters) for each variable (v : number landed, pounds landed, number released) [1, 2].

$$\hat{E}_{m,v} = \sum_{m,v} \hat{E}_{y,w,a,m,v} [1]$$

$$\hat{V}(\hat{E}_{m,v}) = \sum_{m,v} \hat{V}(\hat{E}_{y,w,a,m,v}) [2]$$

This resulted in 3 pairs of SRFS and FCAL sums (3 variables; Table 1). For each of the paired sums, the ratio was calculated as the total SRFS estimate divided by the total FCAL estimate (landings and releases) [3].

$$\hat{R}_v = \frac{\hat{E}_{SRFS,v}}{\hat{E}_{FCAL,v}} [3]$$

Although SRFS and MRIP estimates are derived from survey data that are not completely independent, the strength of correlation between estimates from the two surveys is unknown. To calculate the variance of the ratio above, we assumed a 0% correlation as this is the most conservative approximation of variance if correlation between the two survey estimates is ignored (Cross et al. 2020a). This correlation percentage was recommended by peer review (Stokes et al. 2020). A delta method approximation for the variance of two independent variables was used to calculate the variance of the ratio above ($\hat{V}(\hat{R}_v)$) because this method incorporates error associated with both the numerator (SRFS estimates) and denominator (FCAL estimates). The R statistical software package ‘msm’ and the function `deltamethod` (R Core Team 2023; Jackson 2011) were used to carry out these calculations.

Historic estimates from 1981-2010 were converted to SRFS currency by multiplying the annual FCAL estimate for each year and variable type (number landed, pounds landing, & number released) [4] with the corresponding ratio [3]:

$$\hat{E}_{SRFS-hind,y,w,v} = \hat{R}_v \hat{E}_{FCAL,y,w,v} [4]$$

Variance was again approximated using the delta method and, once again, a 0% correlation was assumed.

Starting in 2012, when the mini-seasons started, the same ratios [3] were applied to wave-level FCAL estimates for each year, wave, and variable type (number landed & number released) [5]:

$$\hat{E}_{SRFS-hind,y,w,m,v} = \hat{R}_v \hat{E}_{FCAL,y,w,v} [4]$$

Pounds of Red Snapper landed were not calibrated at the wave level because the NOAA Southeast Fisheries Science Center does not provide error around the average pounds landed values. After discussion between FWC-FWRI, the NOAA Southeast Fisheries Science Center, and the recreational workgroup lead, it was decided that the average pounds landed with their error could be applied to the calibrated number landed estimates during the assessment process.

From 2021-2024, when SRFS estimates could be provided, estimates were provided for number landed, pounds landed, and number released with associated error for each year and month. Since 2012 the MRIP-FES and SRFS estimates were provided at the finest scale available, two-

month wave and month respectively, to attempt to separate in-season and out-of-season landings and releases.

Findings and Conclusions

For the years in which the SRFS and MRIP overlap, annual Red Snapper estimates derived from SRFS and MRIP-FCAL and associated variances, observed ratios of summed SRFS to FCAL estimates, and approximated variance for each ratio are provided in Table 1. The annual SRFS and MRIP-FCAL estimates, as well as the compared cumulative sums are shown in Figure 2. The Red Snapper ratios were smaller for landings (number of fish = 0.25; lbs of fish = 0.23) than for releases (0.47). The ratios of MRIP-FCAL to SRFS release estimates are similar to those seen for other fish species (Cross et al., 2020b; Ramsay et al., 2024a-c). However, the landings estimate ratios are much smaller for Red Snapper in the Atlantic Ocean, suggesting a larger difference between these surveys for this species in this region. This is likely due to the short season in which to estimate landings and the fact that SRFS and MRIP were not designed to generate estimates for mini-seasons. Median PSE values for the calibrated landings and release estimates were 57% and 47%, respectively for the annual estimates. The annual MRIP and calibrated estimates are provided from 1981-2011 (Table 2; Figure 3). The PSE values for the calibrated landings and release wave estimates were 57% and 38.5%. PSEs were not included for calibrated estimates where the MRIP-FCAL PSEs were 0. MRIP and calibrated estimates are provided by wave from 2012-2020 (Table 3; Figure 4). SRFS estimates are provided by month from 2021-2024 (Table 4).

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Saltwater Recreational Fishing Survey Map

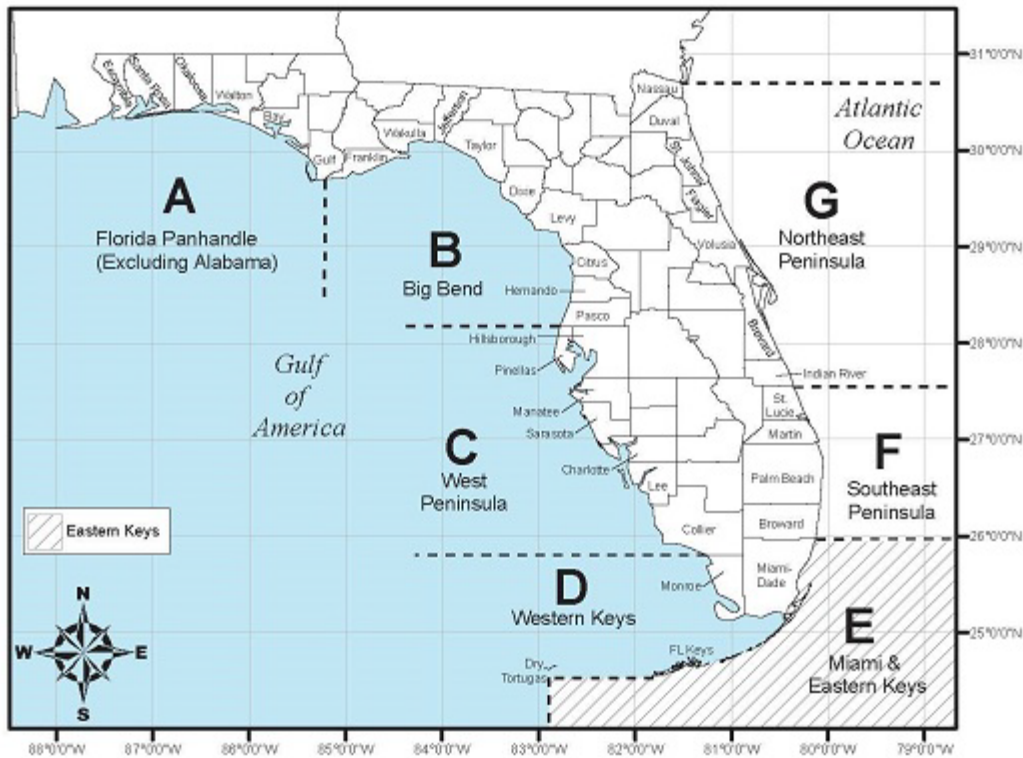


Figure 1. The Gulf Reef Fish Survey was only conducted in regions A-C. In July 2020, the survey was expanded to encompass all of Florida and renamed the State Reef Fish Survey (SRFS). The SRFS encompasses regions A-G on this map. The South Atlantic SRFS estimates come from regions E-G.

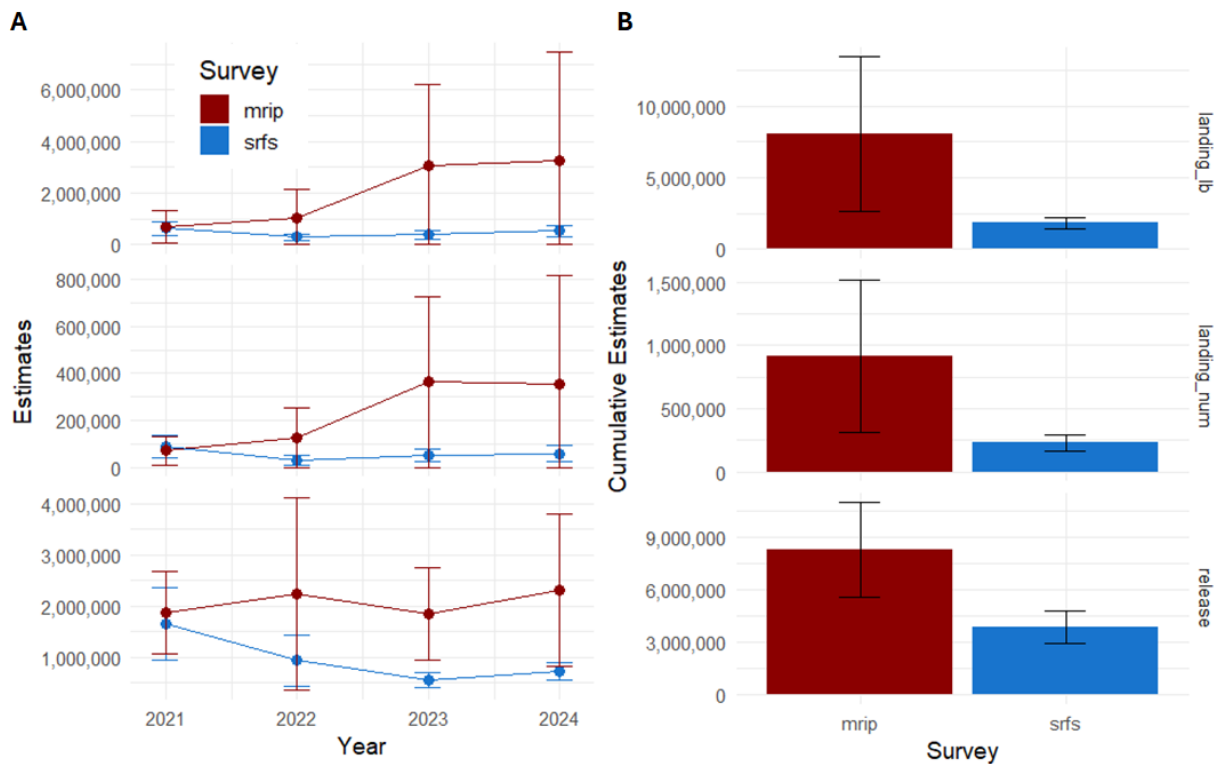


Figure 2. Estimates of landings and releases of Red Snapper (*Lutjanus campechanus*) across years (A) or with all the years combined (B; 2021-2024) for the South Atlantic. Estimates generated by SRFS are shown in blue and estimates generated by MRIP are shown in red. Error bars depict 95% confidence limits.

Table 1. Annual and summed SRFS and MRIP estimates (sum), variances, and ratios of MRIP to SRFS estimates are shown for Red Snapper (*Lutjanus campechanus*) in Florida in the south Atlantic.

Estimate Type	Year	SRFS Sum	SRFS Variance	MRIP Sum	MRIP Variance	Ratio
Landings (lbs)	2021	623,833	18,152,728,054	681,951	100,414,949,112	0.2264
	2022	280,754	4,190,606,215	1,053,527	296,509,264,740	
	2023	387,957	7,158,166,731	3,085,201	2,529,463,509,822	
	2024	532,797	12,729,852,633	3,241,405	4,594,393,036,778	
	Total	1,825,341	42,231,353,633	8,062,085	7,520,780,760,452	
Landings (no. fish)	2021	89,358	577,694,408	70,472	1,005,686,394	0.2508
	2022	31,687	107,252,493	126,122	4,137,339,502	
	2023	50,704	187,214,068	362,752	34,226,275,505	
	2024	57,906	315,911,502	356,273	55,290,776,211	
	Total	229,655	1,188,072,472	915,619	94,660,077,613	
Releases (no. fish)	2021	1,647,587	131,682,298,723	1,870,610	169,360,470,737	0.4664
	2022	932,173	64,665,008,913	2,226,391	916,515,683,993	
	2023	557,231	5,604,397,474	1,845,544	212,877,034,816	
	2024	712,678	7,662,807,393	2,310,624	581,415,109,826	
	Total	3,849,669	209,614,512,503	8,253,169	1,880,168,299,372	

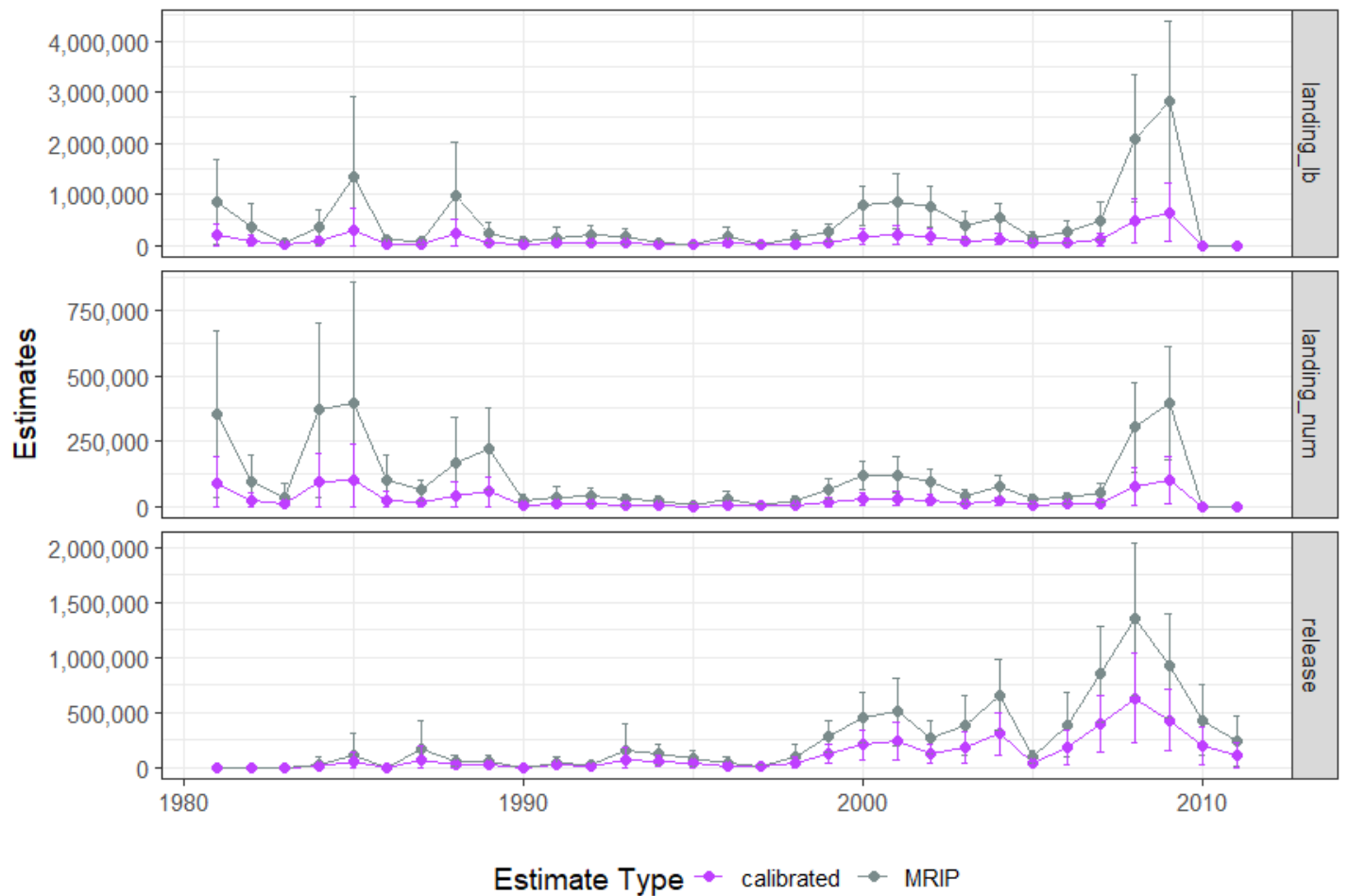


Figure 3. Red Snapper (*Lutjanus campechanus*) annual estimates in the Atlantic Ocean, including original MRIP-FCAL time-series (MRIP) and the MRIP-FCAL time-series calibrated to SRFS currency (calibrated). Estimates are shown from 1981-2011, before the start of the mini-seasons. Landings in pounds (landing_lb), landings in numbers of fish (landing_num), and releases in numbers of fish (release) are shown. Error bars are 95% confidence limits.

Table 2. Original and calibrated MRIP-FCAL annual estimates for Red Snapper (*Lutjanus campechanus*) landing and release estimates in Florida from 1981-2011. The recreational fishery was closed in 2010 & 2011. 2012 was the start of the Red Snapper mini-seasons in the South Atlantic.

Year	MRIP -FCAL		SRFS-FCAL Calibration		MRIP - FCAL		SRFS-FCAL Calibration		MRIP-FCAL		SRFS-FCAL Calibration	
	Landings (no. fish)	PSE	Landings (no. fish)	PSE	Landings (pounds)	PSE	Landings (pounds)	PSE	Releases (no. fish)	PSE	Releases (no. fish)	PSE
1981	353,410	46.0	88,642	58.9	846,497	50.9	191,656	62.2	0	NA	0	NA
1982	91,983	57.0	23,071	67.8	370,165	61.5	83,809	71.2	0	NA	0	NA
1983	32,073	92.0	8,044	99.1	36,681	97.9	8,305	104.3	0	NA	0	NA
1984	370,907	46.0	93,031	58.9	366,727	47.2	83,031	59.3	30,866	100.0	14,398	102.1
1985	398,073	59.0	99,844	69.5	1,340,067	59.8	303,405	69.7	110,324	92.0	51,460	94.2
1986	99,140	51.0	24,866	62.9	97,324	53.0	22,035	64.0	0	NA	0	NA
1987	61,481	32.0	15,421	48.8	74,775	34.5	16,930	49.8	162,180	83.0	75,648	85.5
1988	166,627	53.0	41,793	64.5	969,558	55.7	219,518	66.2	61,695	44.0	28,777	48.5
1989	221,145	36.0	55,468	51.5	241,028	42.6	54,571	55.7	57,047	53.0	26,609	56.8
1990	23,227	55.0	5,826	66.2	74,949	64.0	16,969	73.4	0	NA	0	NA
1991	34,947	64.0	8,765	73.8	153,180	68.2	34,681	77.1	44,765	53.0	20,881	56.8
1992	40,380	38.0	10,128	52.9	216,416	42.8	48,999	55.8	26,919	44.0	12,556	48.5
1993	26,534	40.0	6,655	54.4	178,968	45.4	40,520	57.9	156,893	76.0	73,182	78.7
1994	19,568	51.0	4,908	62.9	45,075	60.6	10,205	70.4	119,120	41.0	55,563	45.8
1995	4,040	60.0	1,013	70.4	16,517	61.8	3,740	71.4	81,744	45.0	38,129	49.4
1996	27,163	61.0	6,813	71.2	165,164	62.9	37,395	72.4	37,867	72.0	17,663	74.8
1997	4,903	62.0	1,230	72.1	15,016	63.3	3,400	72.7	15,049	43.0	7,020	47.6
1998	19,921	48.0	4,997	60.5	137,104	53.9	31,042	64.8	100,271	53.0	46,771	56.8
1999	64,588	31.0	16,200	48.1	249,324	36.3	56,450	51.0	283,511	26.0	132,243	33.1
2000	116,211	24.0	29,148	43.9	772,899	25.0	174,993	43.7	450,581	26.0	210,173	33.1
2001	119,990	30.0	30,096	47.5	859,667	31.6	194,638	47.7	506,411	31.0	236,214	37.1
2002	93,976	27.0	23,571	45.6	747,918	27.5	169,336	45.1	271,011	28.0	126,412	34.7
2003	38,326	34.0	9,613	50.1	383,077	35.5	86,733	50.4	379,936	36.0	177,220	41.4
2004	77,864	27.0	19,530	45.6	525,250	27.5	118,922	45.1	658,035	25.0	306,939	32.3
2005	27,747	33.0	6,959	49.4	149,337	37.4	33,811	51.8	94,405	29.0	44,035	35.5
2006	32,439	35.0	8,136	50.8	271,421	40.0	61,453	53.7	388,768	38.0	181,340	43.1
2007	51,557	36.0	12,931	51.5	478,041	38.2	108,234	52.4	849,085	26.0	396,054	33.1
2008	302,958	29.0	75,988	46.9	2,081,176	30.6	471,200	47.1	1,346,474	26.0	628,060	33.1
2009	395,369	28.0	99,166	46.2	2,811,253	28.7	636,497	45.9	921,503	26.0	429,833	33.1
2010	0	NA	0	NA	0	NA	0	NA	430,059	38.0	200,600	43.1
2011	0	NA	0	NA	0	NA	0	NA	237,813	4.4	110,927	14.8

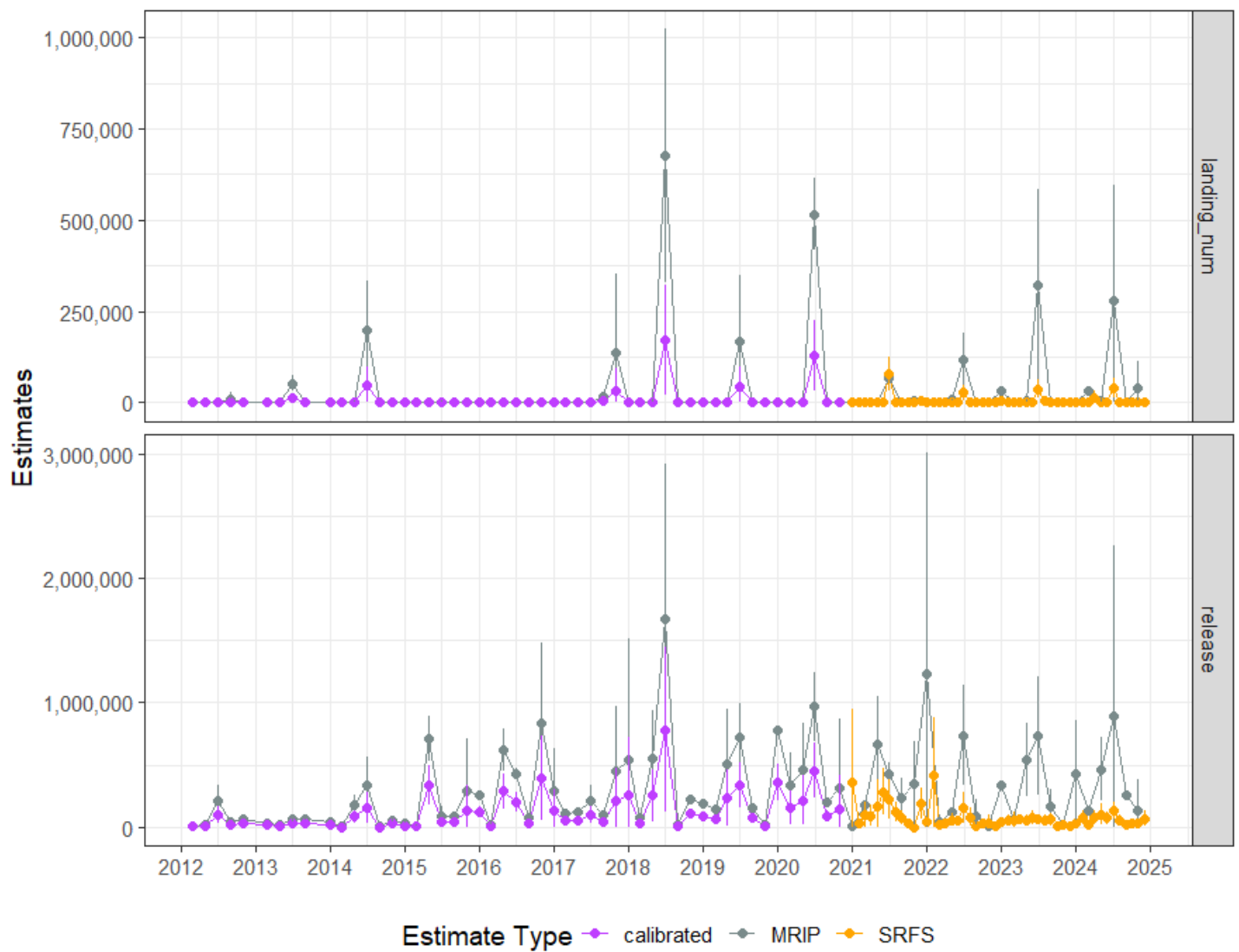


Figure 4. Red Snapper (*Lutjanus campechanus*) estimates in the Atlantic Ocean, including: original SRFS estimates by month (SRFS), original MRIP-FCAL time-series estimates by wave (MRIP), and the MRIP-FCAL time-series calibrated to SRFS currency by wave (calibrated). Estimates are shown from 2012-2024 at the finest time scale possible to account for differences between in-season and out-of-season landings while the mini-seasons were in place. Landings in numbers of fish (landing_num) and releases in numbers of fish (release) are shown. Error bars are 95% confidence limits.

Table 3. Original and calibrated MRIP-FCAL estimates for Red Snapper (*Lutjanus campechanus*) landing and release estimates in Florida from 2012-2020 by two-month wave. If estimates are not provided below, they are 0 for both landings and releases. Wave estimates allow for differentiation of landings and releases that occurred outside of the mini-season.

Year	Wave	MRIP-FCAL		SRFS-FCAL calibration		MRIP-FCAL		SRFS-FCAL calibration	
		Landings (no. fish)	PSE	Landings (no. fish)	PSE	Releases (no. fish)	PSE	Releases (no. fish)	PSE
2012	2	955	0.0	240	36.8	8,734	0.0	4,074	NA
2012	3	0	NA	0	NA	22,044	0.0	10,282	NA
2012	4	0	NA	0	NA	212,294	31.1	99,024	37.2
2012	5	9,827	100.0	2,465	106.6	38,401	2.4	17,912	20.6
2012	6	0	NA	0	NA	65,358	0.0	30,486	NA
2013	2	0	NA	0	NA	32,355	0.0	15,092	NA
2013	3	0	NA	0	NA	20,291	0.0	9,465	NA
2013	4	53,547	20.9	13,431	42.3	66,694	16.5	31,109	26.3
2013	5	0	NA	0	NA	61,639	4.1	28,751	20.8
2014	1	2,962	0.0	743	36.8	41,223	0.0	19,228	NA
2014	2	0	NA	0	NA	3,119	0.0	1,455	NA
2014	3	1,908	100.0	478	106.6	175,131	22.7	81,690	30.5
2014	4	196,713	35.3	49,340	51.0	337,207	34.1	157,289	39.8
2014	5	0	NA	0	NA	3,644	0.0	1,700	NA
2014	6	451	100.0	113	106.6	57,009	25.1	26,592	32.3
2015	1	0	NA	0	NA	27,208	67.3	12,691	70.3
2015	2	0	NA	0	NA	11,569	38.8	5,396	43.8
2015	3	0	NA	0	NA	713,003	13.1	332,578	24.2
2015	4	1,297	100.0	325	106.6	88,967	41.6	41,499	46.4
2015	5	0	NA	0	NA	88,735	0.0	41,390	20.4
2015	6	0	NA	0	NA	289,758	73.1	135,157	75.9
2016	1	0	NA	0	NA	254,363	0.0	118,647	NA
2016	2	0	NA	0	NA	20,463	43.2	9,545	47.8
2016	3	0	NA	0	NA	619,452	14.1	288,942	24.8
2016	4	0	NA	0	NA	427,358	5.3	199,340	21.1
2016	5	0	NA	0	NA	73,147	0.0	34,119	NA
2016	6	0	NA	0	NA	839,383	39.1	391,528	44.1
2017	1	0	NA	0	NA	288,123	60.4	134,394	63.7
2017	2	0	NA	0	NA	110,191	0.0	51,398	NA
2017	3	0	NA	0	NA	119,803	3.5	55,882	20.7
2017	4	0	NA	0	NA	211,242	28.9	98,533	35.4
2017	5	17,606	0.0	4,416	36.8	100,887	0.0	47,058	NA
2017	6	135,898	81.6	34,086	89.5	453,123	58.4	211,358	61.9
2018	1	0	NA	0	NA	541,100	91.7	252,395	93.9
2018	2	0	NA	0	NA	71,188	0.0	33,205	NA
2018	3	3,185	100.0	799	106.6	547,992	36.5	255,609	41.8
2018	4	677,203	26.1	169,856	45.1	1,673,241	37.9	780,479	43.1
2018	5	0	NA	0	NA	14,102	0.0	6,578	NA
2018	6	0	NA	0	NA	226,723	0.0	105,755	NA

Table 3 cont.

Year	Wave	MRIP-FCAL		SRFS-FCAL calibration		MRIP-FCAL		SRFS-FCAL calibration	
		Landings (no. fish)	PSE	Landings (no. fish)	PSE	Releases (no. fish)	PSE	Releases (no. fish)	PSE
2019	2	0	NA	0	NA	138,361	7.6	64,538	21.8

2019	3	0	NA	0	NA	505,308	44.6	235,700	49.1
2019	4	169,208	54.6	42,441	65.8	717,883	19.5	334,855	28.2
2019	5	0	NA	0	NA	153,517	0.0	71,608	20.4
2019	6	0	NA	0	NA	22,475	0.0	10,483	20.4
2020	1	0	NA	0	NA	775,271	0.0	361,623	20.4
2020	2	0	NA	0	NA	333,179	40.6	155,411	45.4
2020	3	0	NA	0	NA	456,650	42.5	213,003	47.1
2020	4	516,372	9.8	129,516	38.1	964,042	14.5	449,675	25.0
2020	5	0	NA	0	NA	196,110	0.0	91,475	20.4
2020	6	0	NA	0	NA	309,330	92.3	144,286	94.5

Table 4. SRFS estimates for Red Snapper (*Lutjanus campechanus*) landing and release estimates in Florida from 2021-2024 by month. If estimates are not provided below, they were 0 for both landings and releases. Month estimates allow for differentiation of landings and releases that occurred outside of the mini-season.

Year	Month	Landings		Landings		Releases	
		(no. fish)	PSE	(pounds)	PSE	(no. fish)	PSE
2021	1	2826.818	93.9	NA	NA	353,827	85.7
2021	2	0	NA	0	NA	25,479	56.2
2021	3	0	NA	0	NA	96,083	58.2

2021	4	0	NA	0	NA	91,532	48.6
2021	5	0	NA	0	NA	170,471	64.5
2021	6	2154.846	97.0	10,040	65.3	283,652	34.1
2021	7	79384.46	29.6	545,573	23.8	220,481	36.4
2021	8	0	NA	0	NA	119,975	32.8
2021	9	0	NA	0	NA	73,799	36.9
2021	10	0	NA	0	NA	25,483	53.6
2021	11	0	NA	0	NA	0	NA
2021	12	4992.271	78.2	68,220	52.8	186,805	34.4
2022	1	0	NA	0	NA	38,746	42.6
2022	2	0	NA	0	NA	410,277	57.7
2022	3	0	NA	0	NA	23,471	57.0
2022	4	0	NA	0	NA	34,509	51.6
2022	5	0	NA	0	NA	58,806	40.0
2022	6	1726.324	69.7	9,248	45.2	49,329	41.9
2022	7	27079.89	37.3	240,003	26.0	152,086	42.1
2022	8	1972.707	88.1	29,299	55.4	80,731	47.7
2022	9	0	NA	0	NA	10,157	60.6
2022	10	0	NA	0	NA	31,551	42.6
2022	11	908.3697	105.5	2,203	71.1	32,356	97.7
2022	12	0	NA	0	NA	10,154	47.3
2023	1	5953.657	87.2	14,926	61.5	38,278	57.1
2023	2	536.1752	30.7	544	20.7	52,994	48.1
2023	3	0	NA	0	NA	53,017	65.0
2023	4	0	NA	0	NA	60,113	31.4
2023	5	165.8722	86.4	918	53.3	51,941	40.9
2023	6	439.1545	100.4	445	67.6	75,258	35.3
2023	7	38017.25	32.5	351,126	23.9	65,196	30.2
2023	8	4521.746	57.9	17,336	43.6	54,172	37.1
2023	9	0	NA	0	NA	61,552	43.8
2023	10	325.6252	89.8	2,072	66.1	12,754	81.4
2023	11	0	NA	0	NA	21,546	49.9
2023	12	744.2268	43.7	591	29.4	10,410	54.4

Table 4 cont.

Year	Month	Landings (no. fish)	PSE	Landings (pounds)	PSE	Releases (no. fish)	PSE
2024	1	0	NA	0	NA	27,164	47.5
2024	2	0	NA	0	NA	75,885	39.1
2024	3	0	NA	0	NA	24,180	36.7
2024	4	13290.05	74.4	123,972	48.5	75,907	35.4
2024	5	182.4837	103.5	1,030	69.7	101,032	43.4
2024	6	1221.5	90.5	7,325	61.0	71,185	34.8
2024	7	40258.8	36.2	373,947	25.2	133,576	25.8

2024	8	0	NA	0	NA	53,171	41.3
2024	9	0	NA	0	NA	22,085	40.8
2024	10	383.8785	38.6	993	26.0	27,684	39.4
2024	11	2321.824	89.4	24,222	60.2	33,027	54.6
2024	12	247.098	105.6	1,307	71.1	67,782	48.6