General Recreational Survey Data for Yellowtail Snapper in the Gulf of Mexico and South Atlantic

Samantha M. Binion-Rock

SEDAR96-AP-01

August 2024

This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

Please cite this document as:

Samantha M. Binion-Rock. 2024. General Recreational Survey Data for Yellowtail Snapper in the Gulf of Mexico and South Atlantic. SEDAR96-WP-01. SEDAR, North Charleston, SC. 43 pp.

SEDAR 96-WP-01
General Recreational Survey Data for Yellowtail Snapper in the Gulf of Mexico and South Atlantic

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

Samantha M. Binion-Rock

Aug 5, 2024

General recreational catch estimates for Yellowtail Snapper are compiled from the following separate sampling programs:
1. Marine Recreational Information Program (MRIP) (SEDAR68-DW-13)
2. Texas Parks and Wildlife Department (TPWD) (SEDAR70-WP-03)
3. Louisiana Creel survey program (LA Creel; 2014+)

- The Louisiana Biological sampling program (LA BIO) does not prioritize sampling of Yellowtail Snapper. Size and age data from Louisiana (2014+) are not available for this assessment.

Parameters for data prepared for SEDAR 96 recreational catch data:

- Species: Yellowtail Snapper
- Year Range: 1981 - 2023
- Geographic Range: Gulf of Mexico and South Atlantic states from Texas to North Carolina. Catch data are summarized by 7 Yellowtail Snapper regions defined as West of FL (TX-AL), NW FL (Escambia to Dixie), SW FL (Levy to Collier), FL Keys (Monroe), SE FL (Indian River to Miami-Dade), NE FL (Nassau to Brevard), and North of FL (NC-GA)
- Fishing Modes: Charter, Private, Shore, Headboat (1981-1985 from Texas to northeastern Florida)
- Weight Units: whole weight

- MRIP Calibration: Fully calibrated estimates that take into account the change in the Fishing Effort Survey (FES), the redesigned Access Point Angler Intercept Survey (APAIS), and the For Hire Survey (FHS). These calibrations allow for estimates in the entire time series to be compared to one another.
- MRIP Data Gaps from COVID: Missing 2020 intercepts were imputed from all APAIS data collected in 2018 and 2019 from the same strata as the 2020 data gap, with original sample weights reduced by a factor of two to account for using two years of data (Cody 2021).
- SEFSC Data QAQC: Size records above an allowable (max size) threshold are excluded from average weight estimation and the summary tables included in this working paper (Tables 8-15). For SEDAR 96 Yellowtail Snapper, this includes any weights heavier than 9.4017 pounds.

Summary of Data Imputations

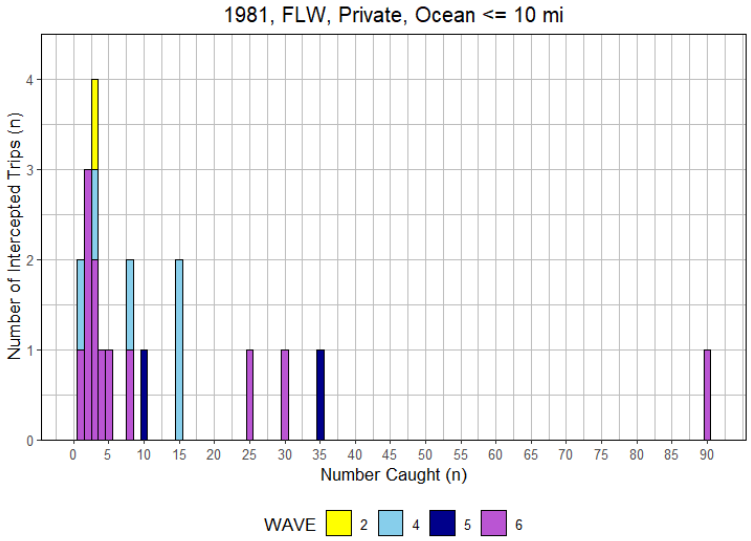
Estimate	Strata	Imputed	Rationale
Catch	1981 Wave 1 FLE and FLW	Yes	Wave 1 catch is not negligible.
Effort	1981 Wave 1 FLE and FLW	Yes	Effort is not species-specific, need to account for effort in Wave 1 before MRIP started.

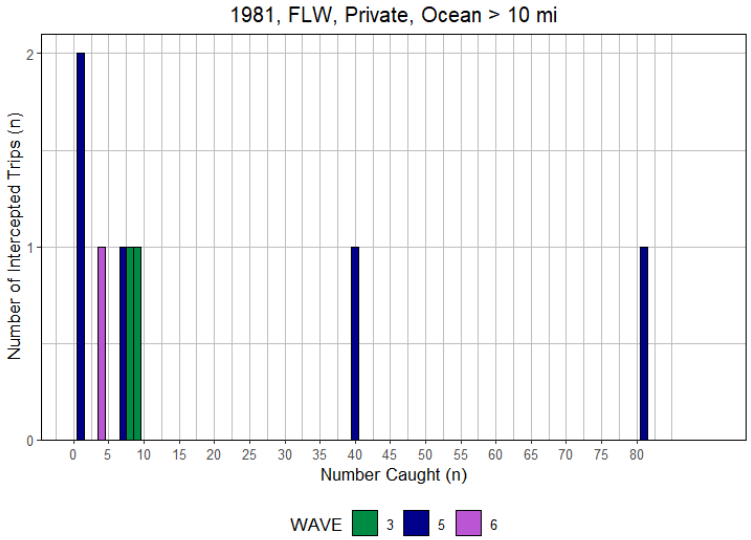
Please refer to Appendix A for details on how estimates were imputed.

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 zero catch estimates that make it difficult to identify relatively small estimates.

- 1981 landings estimate: 5,777,261 fish
  - There were 86 intercepted angler trips with reported or observed Yellowtail Snapper landings. For FLW, private mode, in two areas, 'Ocean <= 10 mi' and 'Ocean > 10 mi', there were several (n=9) angler trips that landed large (>10) numbers of Yellowtail Snappers. These large landings occurred across multiple waves and all trips except one (with 10 harvested Yellowtail Snapper) were seen by the interviewer. This consistency in high landings observations across multiple intercepts suggests the relatively high annual estimate was representative of elevated catch in this year.

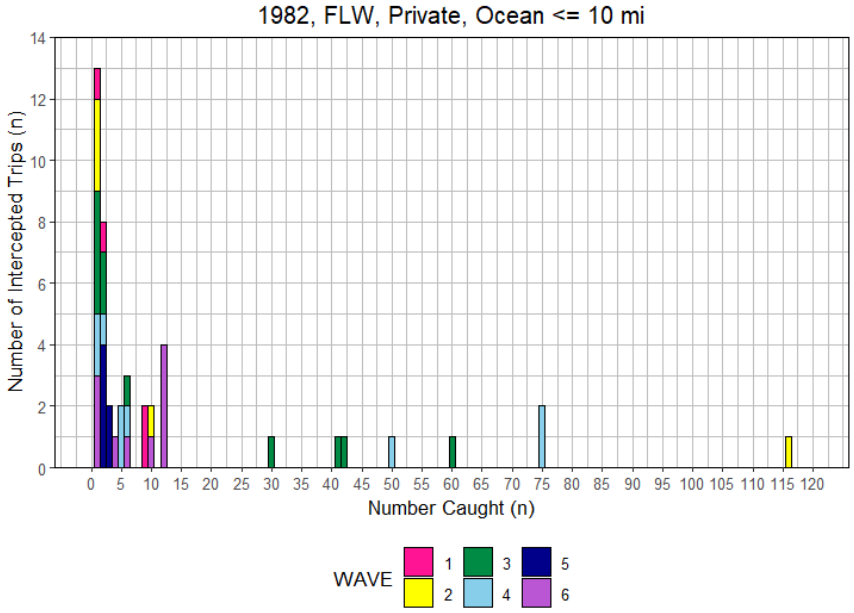




  - The strata with the highest contributions to the landings estimates are listed below.
    - Strata: FLW, Private, Wave 6, and Ocean <= 10 miles
      - Intercept Records: a total of 12 angler trips that resulted in a landings estimate of 1,726,771 fish
    - Strata: FLW, Private, Wave 5, and Ocean > 10 miles
      - Intercept Records: a total of 8 angler trips that resulted in a landings estimate of 859,793 fish

- 1982 landings estimate: 6,123,525 fish
  - There were 122 intercepted angler trips with reported or observed Yellowtail Snapper landings. For FLW, Private mode, Ocean ≤ 10 mi there were 14 angler trips with elevated (n>10) Yellowtail Snapper harvests in

waves 2-6. Of these trips with elevated harvests, three angler trips, each harvesting 12 Yellowtail Snapper, were not seen by the interviewer, while the harvests from the other trips was seen by the interviewer.



- The strata with the highest contributions to the landings estimates are described below.
  - Strata: FLW, Private, Wave 6, and Ocean ≤ 10 mi
    - Intercept Records: a total of 10 angler trips that resulted in a landings estimate of 1,167,120 fish
  - Strata: FLW, Private, Wave 2, and Ocean ≤ 10 mi
    - Intercept Records: a total of 5 angler trips that resulted in a landings estimate of 956,056 fish.
  - Strata: FLW, Private, Wave 3, and Ocean ≤ 10 mi
    - Intercept Records: a total of 11 angler trips that resulted in a landings estimate of 791,428 fish.
  - Strata: FLE, Private, Wave 2, and Ocean > 3 mi
    - Intercept Records: a total of 3 angler trips that resulted in a landings estimate of 1,056,312 fish.
    - Each angler trip reported 4 harvested Yellowtail Snapper that were not seen by the interviewer.

This consistency in high landings observations across multiple intercepts suggests the relatively high annual estimate was representative of elevated catch in this year. However, the high landings estimate from FLE, Private, Wave 2, and Ocean > 3 mi seems to be driven more by high sample weights (wp_catch = 88,026) than by large angler catch.

- 1984 landings estimate: 4,072,789 fish

- There were 146 intercepted angler trips with reported or observed Yellowtail Snapper harvest. The strata contributing the most to the overall estimate are described below.
  - Strata: FLW, Private, 6 and Ocean <= 10 mi
    - Intercept Records: a total of 5 angler trips that resulted in a landings estimate of 1,779,527 fish
    - Four of the angler trips harvested a small (≤ 4) number of Yellowtail Snapper. Two of these trips had harvests seen by the interviewer and harvested 1 and 4 Yellowtail Snapper. Two trips had harvest not seen by the interviewer. These trips had harvested 1 and 4 Yellowtail Snapper.
    - One angler trip harvested 30 Yellowtail Snapper not seen by interviewer.
  - Strata: FLW, Private, 1 and Ocean <= 10 mi
    - Intercept Records: a total of 5 angler trips that resulted in a landings estimate of 662,694 fish
    - Four of the angler harvested a small (≤ 6) number of Yellowtail Snapper. Two of these trips had harvests seen by the interviewer and harvested 5 and 6 Yellowtail Snapper. Two trips had harvests not seen by the interviewer. These trips harvested 3 and 6 Yellowtail Snapper.
    - One angler trip harvested 20 Yellowtail Snapper not seen by interviewer.
  - Strata: FLW, Private, 4 and Ocean <= 10 mi
    - Intercept Records: a total of 2 angler trips that resulted in a landings estimate of 470,472 fish
    - Two angler trips each harvested 20 Yellowtail Snapper that were not seen by the interviewer.

The higher landings estimate for 1984 is primarily driven by a single intercept from FLW, Private, Wave 6, Ocean ≤ 10 mi that had an elevated sample weighting (wp_catch = 46,661) and a large number of harvested (n=30) Yellowtail Snapper.

- 1989 landings estimate: 4,685,734 fish
  - There were 53 intercepted angler trips with reported or observed Yellowtail Snapper landings. The majority of the landings estimate comes from a single strata that is described below.
    - Strata: FLW, Private, Wave 2 and Ocean > 10 mi
      - Intercept Records: a total of 5 angler trips resulted in a landings estimate of 3,356,184 fish.
      - Two angler trips each harvested 1 Yellowtail Snapper that was seen by the interviewer.
      - Three angler trips had large harvests (35-53) of Yellowtail Snapper. One trip harvested 35 Yellowtail Snapper and a

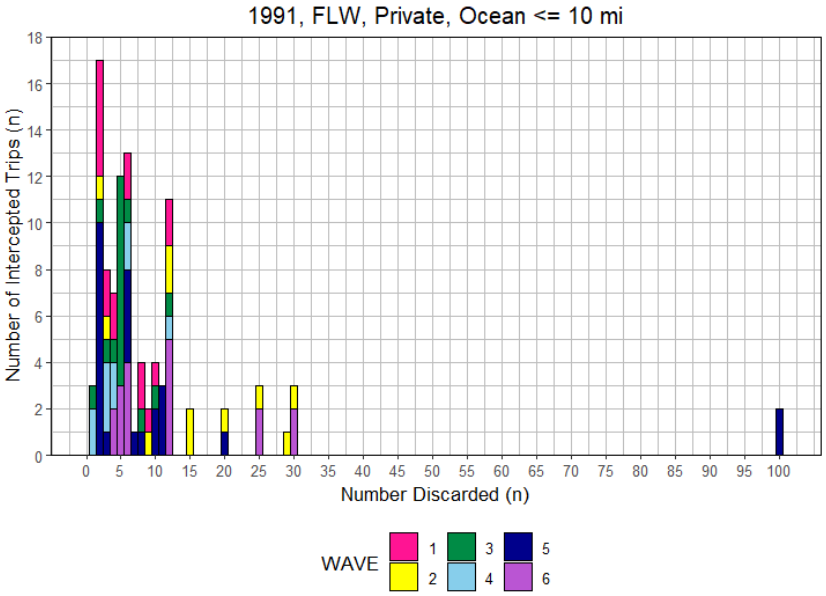
second trip harvested 40 Yellowtail Snapper. One angler trip harvested 53 Yellowtail Snapper, of which, 50 were seen by the interviewer and 3 were not seen by the interviewer.

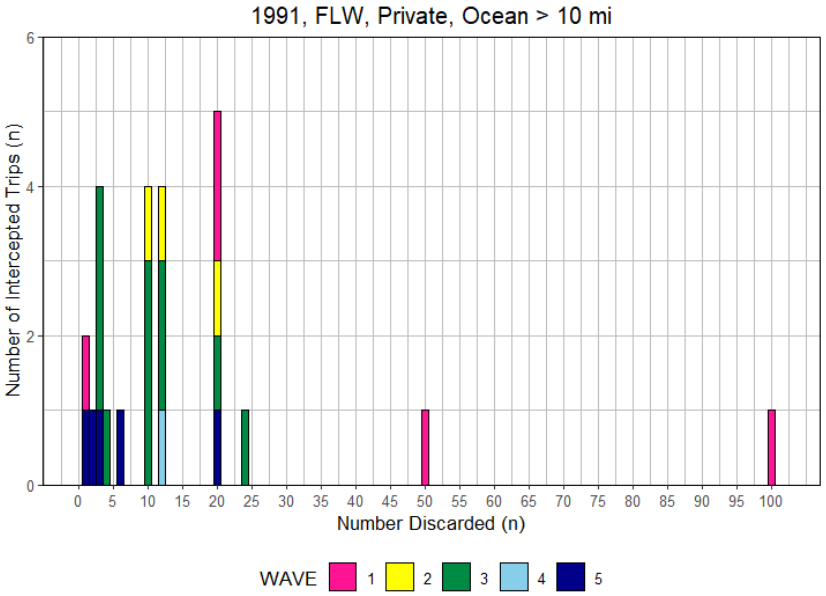
The higher landings estimates for 1989 appear to be primarily driven by a single strata that had a combination of intercepts with larger numbers of harvested Yellowtail Snapper and elevated sample weights (wp_catch = 24,816 and 30,417).

- 1991 landings estimate: 4,210,209fish
  - There were 111 intercepted angler trips with reported or observed Yellowtail Snapper catch. The following strata produced half of the landings for the annual estimate.
    - Strata: FLW, Private, Wave 2 and Ocean > 10 mi
      - Intercept Records: a total of 1 angler trip resulted in a landings estimate of 2,089,106 fish.
      - One angler trip harvested 64 Yellowtail Snapper that were seen by the interviewer.
      -

The higher landings estimates for 1991 appear to driven by a single strata with 1 intercepted trip. The estimate is driven by both elevated harvest (n=64 fish) and elevated sample weighting (wp_catch = 33,258)

- 1991 discards estimate: 13,560,780
  - There were 224 intercepted angler trips with reported Yellowtail Snapper discards. Several intercepted private angler trips in FLW areas 'Ocean ≤ 10 mi' and 'Ocean > 10 mi' reported discards ≥ 10 fish.





- The following strata contributed the most to the discards estimate.
  - Strata: FLW, Private, Wave 1 and Ocean > 10 mi
    - Intercept Records: a total of 5 angler trips resulted in a discards estimate of 2,774,187 fish.
  - Strata: FLW, Private, Wave 6 and Ocean ≤ 10 mi
    - Intercept Records: a total of 20 angler trips resulted in a discards estimate of 2,053,920 fish.
  - Strata: FLW, Private, Wave 2 and Ocean ≤ 10 mi

- Intercept Records: a total of 11 angler trips resulted in a discards estimate of 1,678,346 fish.

The elevated discards estimate for 1991 appears to be driven by multiple intercepted trips with large numbers of reported discarded Yellowtail Snapper. This estimate appears to be indicative of the true signal.

Appendices

Appendix A. Additional Details of Survey Data and SEFSC Estimation

---

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.

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.

Nuttall, MA and VM Matter. 2020. SEDAR 70-WP-03. Texas Parks and Wildlife Department's Marine Sport-Harvest Monitoring Program Metadata. National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Fisheries Statistics 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

Personal Communication from the National Marine Fisheries Service, Office of Science and Technology, Fisheries Statistics Division. June 12, 2024.

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 Yellowtail Snapper in numbers of fish by Yellowtail Snapper region and year (MRIP, LACreel 2014+, TPWD). Note catch from the combined private-shore fishing mode in the LA Creel survey is added to the private mode. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	West of FL		NW FL		SW FL		FL Keys		SE FL		NE FL		North of FL	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	1,355	0	0	0	0	22,967	4,401,034	292,405	1,374,872	643,003	0	0	0	33,661
1982	0	0	0	0	252	0	4,467,816	960,307	1,624,554	76,493	6,187	83,500	24,715	43,549
1983	0	0	0	0	15,073	4,952	1,148,270	444,091	393,075	111,274	15,670	3,105	0	0
1984	0	0	0	0	12,801	766	3,886,442	3,704,911	173,474	82,512	72	0	0	0
1985	5,766	0	77,869	28,955	1,069	0	881,120	200,450	794,865	92,205	203	0	0	0
1986	30	634	1,753	3,445	0	0	967,944	526,285	505,415	520,925	0	0	0	0
1987	0	0	18,307	88,405	22,568	7,874	1,036,488	1,686,591	85,024	320,463	0	0	0	0
1988	0	0	0	0	3,322	0	944,308	1,107,183	190,309	9,620	0	0	0	0
1989	44	0	0	1,530	7,454	809	4,545,713	2,996,331	132,506	108,860	0	0	18	0
1990	43	0	0	0	0	3,817	3,244,008	1,573,892	196,752	402,542	0	0	109	0
1991	0	0	0	0	22,627	17,064	4,002,139	13,067,494	185,442	476,222	0	0	0	0
1992	0	0	0	0	52,760	93,220	697,081	2,468,041	216,960	844,919	2,781	0	501	0
1993	0	0	0	0	36,247	87,134	1,413,803	4,054,449	514,001	635,846	898	2,358	363	0
1994	0	0	0	0	11,092	45,390	1,054,567	2,384,552	225,731	385,565	10,299	0	0	0
1995	0	0	0	0	0	8,545	1,714,527	2,897,975	145,419	405,278	0	0	0	0
1996	0	0	0	0	0	27,104	760,415	2,918,254	110,943	336,919	0	0	0	4,233
1997	87	0	0	0	1,122	148,972	703,325	3,110,494	77,412	225,634	4,115	0	0	0
1998	114	0	0	0	1,445	63,403	714,747	2,099,948	151,564	272,419	10,817	0	12,336	0
1999	0	0	0	0	48,023	175,776	475,459	1,490,951	122,797	401,442	13,265	12,770	0	0

	West of FL		NW FL		SW FL		FL Keys		SE FL		NE FL		North of FL	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2000	0	0	0	0	4,070	13,951	524,983	1,337,014	182,505	415,831	10,884	14,514	195	550
2001	0	0	0	0	10,357	99,127	413,637	782,475	88,335	215,046	9,274	3,517	0	0
2002	0	0	0	0	8,905	72,851	841,618	937,609	90,988	243,234	10,474	5,479	254	0
2003	54	0	0	0	9,017	15,990	1,356,296	1,449,880	120,454	332,172	5,800	1,508	4,581	0
2004	0	0	26	0	30,725	10,993	1,080,375	2,005,649	348,007	489,058	636	0	102	0
2005	184	0	25	0	36,684	259,438	230,070	971,304	328,372	417,565	14,484	0	0	0
2006	299	0	0	0	69,711	120,415	919,036	1,944,655	525,740	596,674	12,602	2,701	0	0
2007	0	0	0	6,299	16,068	45,747	925,816	2,757,224	597,207	659,141	41,260	13,119	0	0
2008	164	0	0	0	4,242	22,136	1,993,374	2,662,844	353,699	550,141	199	0	115	0
2009	0	0	0	0	27,485	13,632	555,846	1,441,073	341,873	938,950	280	720	293	0
2010	0	0	0	0	10,448	5,185	560,700	1,217,365	274,958	300,529	3,428	3,421	0	0
2011	36	0	0	0	28,963	19,166	409,552	1,451,390	181,000	195,052	0	0	0	0
2012	0	0	0	0	93	7,424	681,903	1,422,206	228,910	246,003	0	0	0	0
2013	0	0	0	0	3,634	5,114	1,270,448	3,645,258	449,502	1,236,829	46	98	0	0
2014	0	0	0	0	9,159	34,460	681,226	3,010,249	1,215,990	1,044,952	350	2,613	251	0
2015	0	0	0	0	47,869	31,010	659,207	1,403,570	614,965	1,274,690	0	2,277	0	0
2016	104	0	0	0	14,809	14,417	813,370	1,001,077	695,874	523,481	538	546	0	0
2017	204	0	0	0	304,551	114,382	839,815	1,669,138	400,493	487,509	5,437	1,968	0	0
2018	0	0	0	456	74,051	50,630	658,794	1,513,459	960,244	1,151,028	3,462	45,240	0	0
2019	100	0	0	0	76,392	47,969	478,745	1,081,940	250,499	471,446	0	0	0	0
2020	0	0	0	0	41,747	96,067	737,861	1,982,903	730,010	433,940	249	1,921	0	0
2021	52	0	0	0	23,053	33,331	689,593	1,487,510	512,746	1,140,476	2,762	2,331	0	0
2022	0	0	0	0	174,795	101,681	984,390	1,670,662	525,105	803,396	392	0	0	0
2023	0	0	0	0	169,210	184,362	847,963	3,880,985	665,037	968,527	0	1,395	266	0

Table 1 (continued)

	Total	
Year	AB1	B2
1981	5,777,261	992,036
1982	6,123,525	1,163,849
1983	1,572,089	563,421
1984	4,072,789	3,788,189
1985	1,760,892	321,611
1986	1,475,142	1,051,287
1987	1,162,387	2,103,332
1988	1,137,940	1,116,803
1989	4,685,734	3,107,529
1990	3,440,912	1,980,252
1991	4,210,209	13,560,780
1992	970,082	3,406,179
1993	1,965,313	4,779,787
1994	1,301,688	2,815,507
1995	1,859,946	3,311,798
1996	871,358	3,286,510
1997	786,061	3,485,100
1998	891,023	2,435,771
1999	659,544	2,080,940
2000	722,636	1,781,860
2001	521,603	1,100,164
2002	952,240	1,259,174
2003	1,496,200	1,799,551
2004	1,459,871	2,505,699
2005	609,821	1,648,308
2006	1,527,388	2,664,445
2007	1,580,351	3,481,530
2008	2,351,792	3,235,121
2009	925,777	2,394,375
2010	849,533	1,526,499
2011	619,551	1,665,608
2012	910,906	1,675,632
2013	1,723,631	4,887,298
2014	1,906,977	4,092,275

	Total	
Year	AB1	B2
2015	1,322,040	2,711,547
2016	1,524,696	1,539,521
2017	1,550,500	2,272,998
2018	1,696,551	2,760,814
2019	805,737	1,601,356
2020	1,509,868	2,514,831
2021	1,228,205	2,663,648
2022	1,684,682	2,575,739
2023	1,682,476	5,035,270

Table 2. Yellowtail Snapper landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP, LACreel 2014+, TPWD). 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 Yellowtail Snapper. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	Cbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	61,732	0.54	139 (8)	1,193 (26)	0	0.00	76 (2)	691 (6)	4,596,951	0.41	409 (23)	3,303 (43)	1,118,579	0.44	657 (11)	4,054 (17)
1982	199,621	0.45	133 (15)	1,117 (34)	97	1.00	76 (6)	658 (13)	5,651,822	0.37	889 (32)	7,645 (70)	271,984	0.58	1,128 (12)	8,369 (18)
1983	126,671	0.32	401 (29)	3,446 (105)	5,800	1.00	123 (17)	1,626 (56)	1,113,853	0.47	997 (17)	9,369 (33)	325,765	0.49	910 (6)	7,016 (15)
1984	66,713	0.38	416 (41)	4,260 (98)	4,926	0.64	116 (14)	1,776 (33)	3,815,675	0.51	1,012 (26)	8,261 (38)	185,474	0.59	891 (5)	7,762 (10)
1985	49,751	0.63	357 (17)	3,101 (33)	858	0.61	89 (6)	1,354 (10)	1,570,766	0.58	1,412 (13)	11,706 (25)	139,517	0.63	1,233 (5)	9,199 (6)
1986	33,653	0.60	675 (7)	4,932 (11)					1,047,118	0.49	2,586 (28)	21,809 (49)	394,372	0.91	784 (2)	4,480 (3)
1987	58,040	0.60	793 (9)	6,101 (11)					1,088,170	0.27	2,957 (49)	26,300 (61)	16,177	0.72	953 (2)	6,519 (2)
1988	38,417	0.62	811 (19)	5,572 (29)					1,060,088	0.36	3,039 (38)	25,728 (65)	39,435	0.86	1,329 (2)	9,334 (2)
1989	24,823	0.50	800 (9)	5,929 (12)					4,591,485	0.54	2,497 (40)	21,603 (57)	69,426	0.64	1,098 (3)	9,544 (3)
1990	36,867	0.57	574 (11)	4,659 (27)					3,273,872	0.51	2,096 (44)	18,978 (67)	130,174	0.63	890 (3)	7,750 (3)
1991	67,906	0.36	747 (19)	5,899 (25)					4,036,275	0.53	2,136 (59)	20,866 (85)	106,028	1.00	1,279 (1)	13,195 (1)
1992	138,983	0.34	1,084 (32)	8,410 (93)					775,816	0.25	3,209 (86)	34,208 (145)	55,283	0.62	1,854 (4)	17,096 (4)
1993	82,836	0.47	745 (20)	6,165 (33)					1,795,887	0.19	2,724 (103)	29,424 (171)	86,590	0.49	2,312 (14)	23,019 (17)
1994	81,612	0.51	881 (18)	8,233 (34)					1,182,063	0.20	3,003 (89)	34,545 (127)	38,012	0.43	2,425 (12)	27,022 (12)
1995	36,696	0.39	829 (13)	7,457 (21)					1,758,399	0.31	2,846 (47)	31,981 (84)	64,851	0.59	2,408 (9)	27,317 (11)

	Cbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1996	46,423	0.32	1,085 (20)	10,371 (23)					792,490	0.25	3,320 (61)	35,925 (79)	32,444	0.54	2,195 (4)	23,874 (4)
1997	29,015	0.43	1,409 (37)	11,855 (49)					743,325	0.24	3,247 (48)	37,048 (64)	13,721	0.91	2,053 (2)	22,167 (2)
1998	46,577	0.19	1,791 (87)	14,794 (166)					844,445	0.29	3,316 (51)	39,245 (66)	0	0.00	2,066 (0)	22,723 (0)
1999	35,249	0.17	2,155 (94)	17,291 (147)					613,354	0.22	4,001 (69)	46,323 (86)	10,942	0.63	2,394 (3)	25,671 (3)
2000	33,251	0.16	2,247 (113)	21,501 (170)					640,956	0.36	3,666 (50)	42,036 (65)	48,429	0.75	2,052 (5)	22,163 (5)
2001	70,234	0.21	1,984 (106)	19,952 (177)					448,160	0.52	3,711 (39)	46,170 (48)	3,209	1.00	2,097 (1)	24,131 (1)
2002	103,174	0.14	2,035 (172)	19,801 (283)					841,307	0.31	3,633 (53)	45,677 (69)	7,759	0.47	2,091 (5)	24,343 (5)
2003	108,190	0.15	2,038 (131)	19,528 (297)					1,372,642	0.41	3,735 (56)	43,870 (79)	15,369	0.56	2,201 (4)	23,114 (6)
2004	142,735	0.15	1,828 (130)	18,522 (247)					1,294,750	0.41	3,390 (73)	40,549 (123)	22,386	0.59	1,728 (6)	18,864 (6)
2005	141,520	0.15	1,578 (126)	16,256 (304)					424,258	0.25	3,195 (75)	38,137 (121)	44,043	0.57	1,553 (6)	17,312 (7)
2006	99,977	0.21	1,461 (87)	13,892 (178)					1,401,335	0.29	3,833 (104)	45,421 (196)	26,076	0.56	1,570 (9)	17,040 (9)
2007	191,167	0.20	1,510 (113)	13,896 (260)					1,367,273	0.30	3,619 (99)	43,255 (151)	21,911	0.62	1,770 (6)	18,677 (6)
2008	119,690	0.17	1,568 (135)	12,976 (246)					2,221,232	0.33	3,696 (82)	42,702 (137)	10,870	0.58	1,876 (3)	19,315 (4)
2009	105,873	0.19	1,420 (91)	11,037 (161)					814,183	0.31	3,731 (58)	42,572 (106)	5,721	1.00	1,880 (1)	18,163 (1)
2010	151,636	0.17	1,572 (110)	12,713 (228)					688,166	0.30	4,165 (67)	44,660 (111)	9,731	1.00	2,270 (1)	21,893 (1)
2011	113,308	0.16	1,705 (102)	14,162 (175)					506,242	0.32	4,202 (46)	44,205 (77)	0	0.00	2,355 (0)	21,040 (0)
2012	244,333	0.19	1,807 (126)	15,303 (250)					662,937	0.40	4,550 (53)	47,043 (83)	3,636	0.73	2,616 (2)	22,880 (2)
2013	329,207	0.29	1,103 (98)	7,030 (164)					1,354,854	0.30	3,865 (70)	37,210 (98)	39,569	0.53	1,616 (6)	16,223 (6)
2014	236,650	0.31	2,033 (107)	13,582 (201)					1,264,804	0.22	5,024 (111)	47,866 (170)	405,522	0.85	1,309 (7)	14,184 (7)

	Cbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2015	354,653	0.22	2,222 (114)	14,502 (214)					941,561	0.19	5,212 (99)	47,640 (162)	25,826	0.55	1,376 (4)	14,072 (6)
2016	284,707	0.22	2,287 (110)	13,820 (178)					1,188,881	0.22	5,361 (91)	47,006 (116)	51,108	0.77	1,740 (2)	14,235 (2)
2017	249,458	0.33	2,147 (75)	13,395 (118)					1,263,261	0.21	5,066 (87)	46,049 (138)	37,781	0.96	1,683 (2)	13,934 (2)
2018	191,511	0.29	2,299 (67)	15,555 (115)					1,457,173	0.22	4,909 (76)	41,514 (125)	47,867	0.65	1,603 (3)	14,320 (5)
2019	211,751	0.30	2,336 (38)	14,021 (68)					586,615	0.29	4,915 (62)	41,138 (85)	7,371	1.00	1,657 (1)	13,609 (1)
2020	223,688	0.27	2,470 (65)	15,968 (101)					1,255,996	0.29	5,466 (60)	48,081 (77)	30,184	0.74	1,919 (4)	15,220 (5)
2021	267,848	0.21	2,775 (101)	19,258 (178)					921,236	0.27	5,498 (81)	42,556 (121)	39,122	0.47	2,174 (7)	17,285 (8)
2022	258,325	0.30	2,480 (80)	15,639 (145)					1,261,603	0.24	5,250 (93)	35,463 (136)	164,754	0.59	1,847 (7)	13,177 (7)
2023	243,240	0.21	2,730 (127)	18,810 (211)					1,413,547	0.15	5,472 (118)	39,560 (179)	25,688	0.86	2,043 (3)	15,446 (3)

Table 3. Yellowtail Snapper discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP, LACreel 2014+, TPWD). 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 Yellowtail Snapper. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	Cbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	14,447	0.98	139 (2)	1,193 (2)	0	0.00	76 (2)	691 (2)	384,303	0.43	409 (11)	3,303 (15)	593,287	0.52	657 (6)	4,054 (7)
1982	3,584	0.87	133 (2)	1,117 (2)	0	0.00	76 (1)	658 (1)	1,088,936	0.38	889 (18)	7,645 (43)	71,330	0.35	1,128 (9)	8,369 (11)
1983	28,154	0.63	401 (6)	3,446 (25)	0	0.00	123 (6)	1,626 (25)	467,036	0.76	997 (6)	9,369 (8)	68,230	0.49	910 (5)	7,016 (6)
1984	17,045	0.50	416 (9)	4,260 (26)	295	1.00	116 (5)	1,776 (18)	3,536,617	0.49	1,012 (14)	8,261 (34)	234,233	0.70	891 (4)	7,762 (8)
1985	519	1.00	357 (1)	3,101 (1)	0	0.00	89 (0)	1,354 (0)	215,981	0.59	1,412 (6)	11,706 (12)	105,110	0.48	1,233 (5)	9,199 (7)
1986	2,293	1.00	675 (1)	4,932 (5)					767,829	0.41	2,586 (19)	21,809 (33)	281,165	0.64	784 (4)	4,480 (7)
1987	44,491	0.79	793 (7)	6,101 (10)					1,612,069	0.28	2,957 (51)	26,300 (74)	446,772	0.52	953 (8)	6,519 (8)
1988	33,492	0.89	811 (7)	5,572 (12)					892,739	0.42	3,039 (19)	25,728 (34)	190,572	0.49	1,329 (7)	9,334 (8)
1989	5,439	0.60	800 (4)	5,929 (4)					2,372,095	0.46	2,497 (28)	21,603 (46)	729,995	0.87	1,098 (4)	9,544 (9)
1990	29,690	0.50	574 (9)	4,659 (23)					1,564,316	0.28	2,096 (39)	18,978 (69)	386,246	0.46	890 (7)	7,750 (9)
1991	272,343	0.59	747 (15)	5,899 (27)					11,691,255	0.26	2,136 (74)	20,866 (167)	1,597,182	0.26	1,279 (20)	13,195 (30)
1992	95,361	0.67	1,084 (18)	8,410 (48)					2,570,452	0.19	3,209 (136)	34,208 (288)	740,366	0.26	1,854 (34)	17,096 (50)
1993	18,722	0.50	745 (11)	6,165 (25)					3,675,978	0.16	2,724 (127)	29,424 (241)	1,085,088	0.37	2,312 (51)	23,019 (76)
1994	23,286	0.48	881 (8)	8,233 (15)					2,385,943	0.21	3,003 (96)	34,545 (234)	406,278	0.35	2,425 (37)	27,022 (54)
1995	13,648	0.59	829 (9)	7,457 (17)					2,879,031	0.23	2,846 (68)	31,981 (156)	419,119	0.25	2,408 (32)	27,317 (57)
1996	17,977	0.67	1,085 (7)	10,371 (18)					2,870,471	0.29	3,320 (103)	35,925 (280)	398,062	0.33	2,195 (24)	23,874 (31)

	Cbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1997	16,680	0.41	1,409 (22)	11,855 (60)					3,175,409	0.22	3,247 (85)	37,048 (252)	293,010	0.47	2,053 (15)	22,167 (25)
1998	26,784	0.21	1,791 (56)	14,794 (156)					1,770,389	0.22	3,316 (64)	39,245 (167)	638,597	0.36	2,066 (21)	22,723 (42)
1999	15,224	0.28	2,155 (58)	17,291 (122)					1,868,764	0.24	4,001 (111)	46,323 (204)	196,951	0.35	2,394 (17)	25,671 (27)
2000	14,420	0.23	2,247 (66)	21,501 (147)					1,485,846	0.33	3,666 (68)	42,036 (119)	281,595	0.53	2,052 (16)	22,163 (23)
2001	56,729	0.66	1,984 (45)	19,952 (82)					736,512	0.27	3,711 (52)	46,170 (99)	306,923	0.63	2,097 (15)	24,131 (20)
2002	34,654	0.20	2,035 (82)	19,801 (232)					1,093,559	0.25	3,633 (63)	45,677 (147)	130,960	0.37	2,091 (16)	24,343 (22)
2003	59,385	0.32	2,038 (82)	19,528 (287)					1,408,416	0.39	3,735 (75)	43,870 (173)	331,750	0.46	2,201 (18)	23,114 (34)
2004	41,908	0.25	1,828 (71)	18,522 (199)					1,329,118	0.26	3,390 (75)	40,549 (171)	1,134,673	0.37	1,728 (12)	18,864 (27)
2005	45,697	0.18	1,578 (74)	16,256 (315)					1,133,593	0.36	3,195 (64)	38,137 (133)	469,017	0.53	1,553 (8)	17,312 (22)
2006	37,412	0.24	1,461 (51)	13,892 (225)					2,519,821	0.31	3,833 (79)	45,421 (216)	107,211	0.79	1,570 (4)	17,040 (5)
2007	69,574	0.20	1,510 (79)	13,896 (327)					2,864,653	0.23	3,619 (86)	43,255 (231)	547,303	0.37	1,770 (19)	18,677 (34)
2008	68,273	0.20	1,568 (102)	12,976 (360)					2,521,214	0.23	3,696 (100)	42,702 (263)	645,634	0.34	1,876 (24)	19,315 (55)
2009	55,092	0.25	1,420 (54)	11,037 (220)					1,535,050	0.33	3,731 (54)	42,572 (122)	804,233	0.57	1,880 (18)	18,163 (33)
2010	59,053	0.19	1,572 (73)	12,713 (324)					1,442,850	0.31	4,165 (53)	44,660 (134)	24,596	0.55	2,270 (5)	21,893 (6)
2011	78,621	0.24	1,705 (71)	14,162 (294)					768,575	0.39	4,202 (34)	44,205 (80)	818,412	0.41	2,355 (11)	21,040 (32)
2012	90,840	0.24	1,807 (83)	15,303 (377)					1,217,864	0.30	4,550 (61)	47,043 (135)	366,928	0.42	2,616 (16)	22,880 (33)
2013	124,702	0.26	1,103 (74)	7,030 (296)					3,896,488	0.25	3,865 (89)	37,210 (263)	866,107	0.38	1,616 (21)	16,223 (50)
2014	106,206	0.25	2,033 (67)	13,582 (220)					3,229,733	0.20	5,024 (127)	47,866 (368)	756,336	0.52	1,309 (20)	14,184 (29)
2015	111,562	0.29	2,222 (67)	14,502 (214)					1,787,122	0.18	5,212 (147)	47,640 (337)	812,863	0.27	1,376 (26)	14,072 (49)

	Cbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
2016	91,095	0.40	2,287 (59)	13,820 (140)					1,243,011	0.21	5,361 (82)	47,006 (163)	205,414	0.35	1,740 (15)	14,235 (18)
2017	70,578	0.30	2,147 (41)	13,395 (128)					1,167,080	0.20	5,066 (82)	46,049 (210)	1,035,340	0.46	1,683 (18)	13,934 (31)
2018	108,902	0.23	2,299 (55)	15,555 (189)					2,234,347	0.25	4,909 (91)	41,514 (247)	417,565	0.28	1,603 (17)	14,320 (30)
2019	178,722	0.44	2,336 (32)	14,021 (101)					709,306	0.20	4,915 (67)	41,138 (145)	713,328	0.43	1,657 (20)	13,609 (38)
2020	103,946	0.32	2,470 (47)	15,968 (160)					1,147,231	0.25	5,466 (78)	48,081 (157)	1,263,654	0.50	1,919 (24)	15,220 (65)
2021	137,961	0.22	2,775 (84)	19,258 (209)					1,706,442	0.18	5,498 (117)	42,556 (273)	819,245	0.24	2,174 (36)	17,285 (91)
2022	173,010	0.26	2,480 (67)	15,639 (179)					1,619,242	0.15	5,250 (130)	35,463 (269)	783,487	0.22	1,847 (38)	13,177 (66)
2023	149,870	0.18	2,730 (98)	18,810 (335)					2,985,394	0.17	5,472 (175)	39,560 (384)	1,900,006	0.24	2,043 (38)	15,446 (91)

Table 4. Yellowtail 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 (MRIP, LACreel 2014+, TPWD). 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 Yellowtail Snapper.

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	5,777,261	0.33	1,205 (42)	8,550 (86)	992,036	0.35	1,205 (19)	8,550 (24)
1982	6,123,525	0.34	2,150 (59)	17,131 (122)	1,163,849	0.36	2,150 (29)	17,131 (56)
1983	1,572,089	0.35	2,207 (52)	19,831 (153)	563,421	0.63	2,207 (17)	19,831 (39)
1984	4,072,789	0.46	2,253 (72)	20,283 (146)	3,788,189	0.41	2,253 (27)	20,283 (68)
1985	1,760,892	0.52	2,902 (35)	24,006 (64)	321,611	0.43	2,902 (12)	24,006 (20)
1986	1,475,142	0.42	3,933 (37)	31,221 (63)	1,051,287	0.35	3,933 (24)	31,221 (45)
1987	1,162,387	0.25	4,577 (60)	38,920 (74)	2,103,332	0.24	4,577 (66)	38,920 (92)
1988	1,137,940	0.34	5,052 (59)	40,634 (96)	1,116,803	0.34	5,052 (33)	40,634 (54)
1989	4,685,734	0.52	4,256 (52)	37,076 (72)	3,107,529	0.40	4,256 (36)	37,076 (59)
1990	3,440,912	0.48	3,455 (58)	31,387 (97)	1,980,252	0.23	3,455 (55)	31,387 (101)
1991	4,210,209	0.51	4,017 (79)	39,960 (111)	13,560,780	0.23	4,017 (109)	39,960 (224)
1992	970,082	0.20	5,987 (122)	59,714 (242)	3,406,179	0.15	5,987 (188)	59,714 (386)
1993	1,965,313	0.17	5,626 (137)	58,608 (221)	4,779,787	0.15	5,626 (189)	58,608 (342)
1994	1,301,688	0.18	6,120 (119)	69,800 (173)	2,815,507	0.18	6,120 (141)	69,800 (303)
1995	1,859,946	0.29	5,899 (69)	66,755 (116)	3,311,798	0.20	5,899 (109)	66,755 (230)
1996	871,358	0.23	6,381 (85)	70,170 (106)	3,286,510	0.25	6,381 (134)	70,170 (329)
1997	786,061	0.22	6,486 (87)	71,070 (115)	3,485,100	0.20	6,486 (122)	71,070 (337)
1998	891,023	0.27	6,935 (138)	76,762 (232)	2,435,771	0.18	6,935 (141)	76,762 (365)
1999	659,544	0.20	8,261 (166)	89,285 (236)	2,080,940	0.22	8,261 (186)	89,285 (353)
2000	722,636	0.32	7,674 (168)	85,689 (240)	1,781,860	0.29	7,674 (150)	85,689 (289)
2001	521,603	0.45	7,500 (146)	90,253 (226)	1,100,164	0.26	7,500 (112)	90,253 (201)
2002	952,240	0.27	7,493 (230)	89,821 (357)	1,259,174	0.22	7,493 (161)	89,821 (401)
2003	1,496,200	0.38	7,697 (191)	86,512 (382)	1,799,551	0.31	7,697 (175)	86,512 (494)
2004	1,459,871	0.37	6,651 (209)	77,935 (376)	2,505,699	0.21	6,651 (158)	77,935 (397)
2005	609,821	0.18	6,035 (207)	71,705 (432)	1,648,308	0.29	6,035 (146)	71,705 (470)
2006	1,527,388	0.26	6,530 (200)	76,353 (383)	2,664,445	0.29	6,530 (134)	76,353 (446)
2007	1,580,351	0.26	6,579 (218)	75,828 (417)	3,481,530	0.20	6,579 (184)	75,828 (592)
2008	2,351,792	0.31	6,831 (220)	74,993 (387)	3,235,121	0.19	6,831 (226)	74,993 (678)
2009	925,777	0.27	6,731 (150)	71,772 (268)	2,394,375	0.29	6,731 (126)	71,772 (375)
2010	849,533	0.25	7,697 (178)	79,266 (340)	1,526,499	0.29	7,697 (131)	79,266 (464)
2011	619,551	0.26	7,927 (148)	79,407 (252)	1,665,608	0.27	7,927 (116)	79,407 (406)

	AB1				B2			
Year	**Total**	**CV**	**PSU**	**Trp**	**Total**	**CV**	**PSU**	**Trp**
2012	910,906	0.29	8,628 (181)	85,226 (335)	1,675,632	0.23	8,628 (160)	85,226 (545)
2013	1,723,631	0.24	6,270 (174)	60,463 (268)	4,887,298	0.20	6,270 (184)	60,463 (609)
2014	1,906,977	0.23	7,667 (225)	75,632 (378)	4,092,275	0.17	7,667 (214)	75,632 (617)
2015	1,322,040	0.14	8,069 (217)	76,214 (382)	2,711,547	0.14	8,069 (240)	76,214 (600)
2016	1,524,696	0.17	8,638 (203)	75,061 (296)	1,539,521	0.17	8,638 (156)	75,061 (321)
2017	1,550,500	0.18	8,138 (164)	73,378 (258)	2,272,998	0.23	8,138 (141)	73,378 (369)
2018	1,696,551	0.19	8,015 (146)	71,389 (245)	2,760,814	0.20	8,015 (163)	71,389 (466)
2019	805,737	0.20	8,057 (101)	68,768 (154)	1,601,356	0.21	8,057 (119)	68,768 (284)
2020	1,509,868	0.21	9,092 (129)	79,269 (183)	2,514,831	0.27	9,092 (149)	79,269 (382)
2021	1,228,205	0.20	9,619 (189)	79,099 (307)	2,663,648	0.13	9,619 (237)	79,099 (573)
2022	1,684,682	0.19	8,790 (180)	64,279 (288)	2,575,739	0.11	8,790 (235)	64,279 (514)
2023	1,682,476	0.12	9,409 (248)	73,816 (393)	5,035,270	0.12	9,409 (311)	73,816 (810)

Table 5. Yellowtail 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 (MRIP, LACreel 2014+, TPWD). MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	Shore		Hbt		Cbt		Priv		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV
1981	702,590	0.49	0	0.00	63,074	0.57	3,195,231	0.62	3,960,896	0.54
1982	75,049	0.59	106	1.00	466,332	0.45	6,424,656	0.42	6,966,142	0.39
1983	217,496	0.50	6,552	1.00	131,926	0.33	599,939	0.58	955,912	0.47
1984	80,812	0.60	7,053	0.64	111,187	0.42	2,600,609	0.54	2,799,661	0.49
1985	226,570	0.63	1,654	0.62	80,841	0.64	2,006,337	0.60	2,315,402	0.54
1986	583,979	0.96			92,467	0.62	1,705,353	0.50	2,381,800	0.46
1987	29,941	0.72			210,319	0.61	1,443,521	0.31	1,683,781	0.29
1988	68,175	0.86			67,730	0.72	1,770,553	0.36	1,906,458	0.41
1989	126,115	0.64			50,739	0.51	9,636,711	0.57	9,813,564	0.54
1990	203,353	0.63			68,064	0.57	4,916,112	0.52	5,187,529	0.49
1991	223,142	1.00			166,145	0.48	9,023,370	0.54	9,412,657	0.54
1992	104,194	0.62			336,147	0.38	924,445	0.29	1,364,786	0.26
1993	66,012	0.51			149,235	0.57	2,102,925	0.24	2,318,172	0.28
1994	51,401	0.43			145,692	0.53	1,480,469	0.27	1,677,563	0.25
1995	86,641	0.60			72,897	0.40	1,842,017	0.34	2,001,555	0.32
1996	44,836	0.55			68,788	0.33	1,100,620	0.30	1,214,245	0.27
1997	23,855	0.91			76,739	0.46	1,001,735	0.26	1,102,329	0.27
1998	0	0.00			67,535	0.29	1,011,412	0.33	1,078,948	0.34
1999	14,414	0.63			51,469	0.22	737,280	0.28	803,164	0.25
2000	65,319	0.75			46,277	0.19	582,917	0.39	694,514	0.34
2001	3,836	1.00			107,163	0.23	475,810	0.53	586,810	0.46
2002	8,131	0.47			137,178	0.17	734,137	0.33	879,446	0.29
2003	18,752	0.60			147,720	0.18	1,439,879	0.42	1,606,351	0.39
2004	24,470	0.59			173,721	0.18	1,400,347	0.42	1,598,539	0.38
2005	41,469	0.57			167,090	0.17	410,515	0.28	619,074	0.20
2006	22,112	0.56			112,211	0.24	1,566,695	0.30	1,701,019	0.28
2007	24,670	0.64			223,489	0.22	1,593,440	0.34	1,841,598	0.28
2008	10,387	0.67			141,870	0.22	2,549,617	0.34	2,701,874	0.34
2009	6,545	1.00			105,890	0.23	792,464	0.33	904,899	0.29
2010	10,061	1.00			168,258	0.19	801,109	0.31	979,428	0.26
2011	0	0.00			142,439	0.18	798,161	0.32	940,599	0.27
2012	4,183	0.73			287,996	0.21	721,367	0.43	1,013,547	0.31

	Shore		Hbt		Cbt		Priv		Total	
Year	LBS	CV	LBS	CV	LBS	CV	LBS	CV	LBS	CV
2013	38,076	0.53			324,920	0.30	1,226,448	0.36	1,589,444	0.27
2014	422,758	0.85			286,608	0.32	1,263,411	0.30	1,972,777	0.28
2015	30,218	0.56			409,356	0.24	942,727	0.23	1,382,301	0.18
2016	55,980	0.77			326,837	0.24	1,122,977	0.25	1,505,793	0.20
2017	46,742	0.96			293,900	0.34	1,538,503	0.27	1,879,144	0.23
2018	52,905	0.67			250,164	0.31	1,252,090	0.24	1,555,158	0.22
2019	7,189	1.00			284,665	0.31	547,284	0.36	839,138	0.25
2020	40,962	0.75			329,275	0.31	1,137,603	0.33	1,507,840	0.26
2021	43,266	0.47			316,746	0.24	825,730	0.32	1,185,742	0.24
2022	102,669	0.59			334,958	0.32	1,561,707	0.31	1,999,334	0.24
2023	27,107	0.86			268,609	0.23	1,340,826	0.21	1,636,542	0.17

Table 6. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Yellowtail 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. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
1981	29 (6)	0.5	1.4	0.8	3.6	0 (0)	0.0	0.0	0.0	0.0	239 (43)	0.2	0.8	0.8	5.3	65 (17)	0.2	0.7	0.8	3.6
1982	39 (5)	0.8	2.7	1.5	6.6	0 (0)	0.0	0.0	0.0	0.0	303 (70)	0.2	1.1	0.7	4.0	49 (18)	0.2	0.3	0.1	0.7
1983	76 (11)	0.4	1.1	0.8	3.8	6 (2)	0.5	1.0	0.5	1.8	97 (33)	0.2	0.8	0.9	6.0	23 (12)	0.2	0.6	0.8	3.3
1984	58 (16)	0.5	1.7	0.8	3.2	17 (10)	0.7	1.4	0.7	3.0	104 (38)	0.2	0.7	0.4	2.6	20 (10)	0.2	0.4	0.2	0.7
1985	17 (7)	0.9	1.7	0.6	3.2	5 (5)	1.6	2.6	0.8	3.3	69 (24)	0.2	1.3	0.6	3.7	11 (6)	0.2	0.4	0.2	0.7
1986	43 (11)	0.7	2.7	0.8	4.2						127 (48)	0.2	1.6	0.7	4.0	8 (3)	0.2	1.3	1.1	3.3
1987	48 (11)	1.1	3.5	1.3	7.8						230 (61)	0.2	1.4	0.8	4.6	2 (2)	0.2	0.7	0.6	1.1
1988	14 (2)	0.7	2.1	1.3	4.6						45 (13)	0.7	1.7	0.3	2.0	0 (0)	0.0	0.0	0.0	0.0
1989	57 (12)	0.7	2.0	0.9	4.5						180 (56)	0.4	1.7	1.1	5.9	6 (3)	1.1	1.6	0.4	2.2
1990	84 (27)	0.2	1.9	0.9	4.6						212 (66)	0.3	1.4	0.8	3.1	6 (3)	1.1	1.8	0.6	2.6
1991	119 (25)	0.2	2.3	1.4	7.0						289 (85)	0.4	1.8	1.0	5.5	5 (1)	0.7	3.2	1.8	5.4
1992	305 (78)	0.4	2.2	1.4	8.3						286 (136)	0.4	1.1	0.5	3.8	9 (3)	0.4	1.6	0.9	3.1
1993	120 (33)	0.7	1.6	0.9	4.9						511 (171)	0.4	1.2	0.6	3.1	31 (17)	0.2	0.8	0.6	2.3
1994	165 (34)	0.7	1.8	1.0	5.5						382 (126)	0.4	1.2	0.7	4.9	21 (12)	0.2	0.9	0.5	2.6
1995	80 (21)	0.8	1.8	1.3	8.6						302 (84)	0.3	1.2	0.8	3.6	24 (11)	0.1	1.0	0.8	3.0
1996	98 (23)	0.5	1.5	0.5	2.5						252 (79)	0.4	1.2	0.5	2.9	7 (4)	0.7	1.3	0.6	2.4
1997	329 (49)	0.4	2.0	1.2	5.8						188 (64)	0.4	1.2	0.5	2.5	4 (2)	0.8	1.3	0.8	2.4
1998	920 (165)	0.4	1.4	0.8	6.8						221 (65)	0.4	1.1	0.7	4.9	0 (0)	0.0	0.0	0.0	0.0
1999	953 (147)	0.5	1.5	0.7	4.8						281 (86)	0.5	1.1	0.6	3.1	3 (3)	0.2	0.4	0.2	0.7

	Cbt					Hbt					Priv					Shore				
Year	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max	N	Min	Avg	SD	Max
2000	928 (170)	0.5	1.4	0.8	5.3						181 (65)	0.6	1.1	0.5	3.6	9 (5)	0.4	0.8	0.3	1.3
2001	995 (177)	0.6	1.5	0.7	4.8						114 (48)	0.5	1.3	0.5	2.6	1 (1)	1.0	1.0	0.0	1.0
2002	1,212 (283)	0.3	1.4	0.9	5.8						206 (69)	0.4	0.9	0.3	1.8	7 (5)	0.7	1.0	0.3	1.2
2003	1,608 (296)	0.4	1.3	0.7	5.7						209 (79)	0.4	1.0	0.3	2.0	7 (6)	0.5	1.3	0.5	2.0
2004	1,433 (247)	0.4	1.1	0.6	4.5						341 (123)	0.4	1.0	0.3	2.6	8 (6)	0.7	0.8	0.1	1.0
2005	1,378 (304)	0.4	1.2	0.7	6.2						311 (121)	0.1	1.0	0.4	2.2	13 (7)	0.2	0.9	0.4	1.7
2006	1,111 (178)	0.4	1.0	0.5	5.4						562 (196)	0.4	0.9	0.5	3.7	16 (9)	0.6	0.8	0.1	1.1
2007	1,438 (260)	0.3	1.2	0.5	4.1						478 (151)	0.5	1.0	0.5	4.4	6 (6)	0.8	1.2	0.4	1.8
2008	1,233 (246)	0.4	1.2	0.7	5.0						445 (137)	0.3	1.1	0.5	3.2	7 (4)	0.9	1.3	0.7	2.8
2009	741 (161)	0.4	1.0	0.4	2.8						258 (106)	0.6	1.1	0.4	2.7	1 (1)	1.8	1.8	0.0	1.8
2010	1,259 (228)	0.4	1.1	0.5	4.9						244 (111)	0.4	1.1	0.5	2.5	1 (1)	0.6	0.6	0.0	0.6
2011	975 (175)	0.4	1.3	0.6	4.3						199 (76)	0.6	1.4	0.5	2.8	0 (0)	0.0	0.0	0.0	0.0
2012	1,414 (250)	0.3	1.2	0.6	4.1						218 (83)	0.2	1.1	0.4	3.0	2 (2)	0.7	0.7	0.0	0.7
2013	979 (164)	0.3	1.0	0.4	3.7						391 (98)	0.2	0.9	0.4	3.8	10 (6)	0.6	1.1	0.5	2.3
2014	1,110 (201)	0.4	1.1	0.6	4.1						555 (170)	0.2	1.0	0.5	3.6	9 (7)	0.5	0.9	0.3	1.3
2015	1,180 (214)	0.3	1.1	0.6	3.9						514 (162)	0.4	1.0	0.4	4.0	6 (6)	0.7	1.0	0.2	1.2
2016	844 (175)	0.5	1.2	0.6	4.5						394 (116)	0.4	0.9	0.4	3.3	3 (2)	0.6	0.7	0.2	1.0
2017	639 (117)	0.4	1.2	0.5	3.4						528 (137)	0.5	1.3	0.7	4.6	2 (2)	0.4	0.6	0.3	0.8
2018	726 (115)	0.4	1.4	0.8	4.1						550 (125)	0.3	0.9	0.3	2.4	15 (5)	0.3	1.1	0.8	3.4
2019	359 (67)	0.4	1.2	0.6	3.7						246 (83)	0.5	1.0	0.4	3.7	1 (1)	0.7	0.7	0.0	0.7
2020	604 (66)	0.4	1.5	0.8	4.2						294 (52)	0.4	1.0	0.4	3.3	13 (2)	0.5	1.3	0.8	3.4
2021	843 (178)	0.4	1.1	0.6	4.0						403 (120)	0.4	1.0	0.4	3.5	12 (8)	0.5	0.8	0.2	1.0
2022	831 (145)	0.5	1.2	0.6	4.1						552 (136)	0.4	1.1	0.5	4.3	15 (7)	0.4	0.6	0.1	1.0
2023	1,148 (211)	0.4	1.1	0.5	4.3						657 (179)	0.3	1.0	0.4	4.0	4 (3)	0.5	0.7	0.1	0.9

Table 7. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Yellowtail 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 lengths and weights.

Year	N	Min	Avg	SD	Max
1981	333 (66)	0.2	0.8	0.8	5.3
1982	391 (93)	0.2	1.2	1.0	6.6
1983	202 (58)	0.2	0.9	0.9	6.0
1984	199 (74)	0.2	1.0	0.7	3.2
1985	102 (42)	0.2	1.3	0.8	3.7
1986	178 (62)	0.2	1.8	0.9	4.2
1987	280 (74)	0.2	1.8	1.2	7.8
1988	59 (15)	0.7	1.8	0.7	4.6
1989	243 (71)	0.4	1.8	1.1	5.9
1990	302 (96)	0.2	1.6	0.8	4.6
1991	413 (111)	0.2	2.0	1.2	7.0
1992	600 (217)	0.4	1.7	1.2	8.3
1993	662 (221)	0.2	1.3	0.7	4.9
1994	568 (172)	0.2	1.4	0.8	5.5
1995	406 (116)	0.1	1.3	0.9	8.6
1996	357 (106)	0.4	1.3	0.6	2.9
1997	521 (115)	0.4	1.7	1.1	5.8
1998	1,141 (230)	0.4	1.4	0.8	6.8
1999	1,237 (236)	0.2	1.4	0.7	4.8
2000	1,118 (240)	0.4	1.4	0.8	5.3
2001	1,110 (226)	0.5	1.5	0.7	4.8
2002	1,425 (357)	0.3	1.3	0.8	5.8
2003	1,824 (381)	0.4	1.3	0.7	5.7
2004	1,782 (376)	0.4	1.1	0.6	4.5
2005	1,702 (432)	0.1	1.1	0.6	6.2
2006	1,689 (383)	0.4	1.0	0.5	5.4
2007	1,922 (417)	0.3	1.1	0.5	4.4
2008	1,685 (387)	0.3	1.1	0.6	5.0
2009	1,000 (268)	0.4	1.0	0.4	2.8
2010	1,504 (340)	0.4	1.1	0.5	4.9
2011	1,174 (251)	0.4	1.3	0.6	4.3
2012	1,634 (335)	0.2	1.2	0.6	4.1

Year	N	Min	Avg	SD	Max
2013	1,380 (268)	0.2	1.0	0.4	3.8
2014	1,674 (378)	0.2	1.1	0.5	4.1
2015	1,700 (382)	0.3	1.1	0.5	4.0
2016	1,241 (293)	0.4	1.1	0.5	4.5
2017	1,169 (256)	0.4	1.2	0.6	4.6
2018	1,291 (245)	0.3	1.2	0.7	4.1
2019	606 (151)	0.4	1.1	0.5	3.7
2020	911 (120)	0.4	1.3	0.8	4.2
2021	1,258 (306)	0.4	1.1	0.5	4.0
2022	1,398 (288)	0.4	1.2	0.6	4.3
2023	1,809 (393)	0.3	1.0	0.5	4.3

Table 9. Estimated average weights of landed Yellowtail Snapper in pounds whole weight (WGT) with associated coefficients of variation (CV; Approach 2 described in Nuttall and Dettloff 2022) by year and mode (MRIP and TPWD). Average weight estimates are calculated from annual estimates (by-mode) of landings-in-weight (whole, Table 7) divided by estimates of landings-in-number (Table 2). Sample size (N) is provided as the total number of angler trips and, in parentheses, number of fish from which weight information was collected. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

	Shore			Hbt			Cbt			Priv			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
1981	0.63	0.24	17 (65)	0.00	0.00	0 (0)	1.02	0.22	6 (29)	0.70	0.51	43 (239)	0.69	0.45	66 (333)
1982	0.28	0.14	18 (49)	1.09	0.00	0 (0)	2.34	0.01	5 (39)	1.14	0.22	70 (303)	1.14	0.21	93 (391)
1983	0.67	0.13	12 (23)	1.13	0.03	2 (6)	1.04	0.10	11 (76)	0.54	0.39	33 (97)	0.61	0.33	58 (202)
1984	0.44	0.14	10 (20)	1.43	0.10	10 (17)	1.67	0.19	16 (58)	0.68	0.21	38 (104)	0.69	0.20	74 (199)
1985	1.62	0.00	6 (11)	1.93	0.14	5 (5)	1.62	0.14	7 (17)	1.28	0.21	25 (70)	1.31	0.18	43 (103)
1986	1.48	0.74	3 (8)				2.75	0.18	11 (43)	1.63	0.12	49 (128)	1.61	0.22	63 (179)
1987	1.85	0.00	2 (2)				3.62	0.14	11 (48)	1.33	0.16	61 (230)	1.45	0.16	74 (280)
1988	1.73	0.00	0 (0)				1.76	0.46	2 (14)	1.67	0.05	13 (45)	1.68	0.24	15 (59)
1989	1.82	0.00	3 (6)				2.04	0.14	12 (57)	2.10	0.21	57 (181)	2.09	0.19	72 (244)
1990	1.56	0.00	3 (6)				1.85	0.09	27 (84)	1.50	0.13	67 (214)	1.51	0.11	97 (304)
1991	2.10	0.00	1 (5)				2.45	0.33	25 (119)	2.24	0.12	85 (289)	2.24	0.20	111 (413)
1992	1.88	0.00	3 (9)				2.42	0.18	78 (305)	1.19	0.16	136 (286)	1.41	0.18	217 (600)
1993	0.76	0.18	17 (31)				1.80	0.36	33 (120)	1.17	0.15	171 (511)	1.18	0.22	221 (662)
1994	1.35	0.03	12 (21)				1.79	0.15	34 (165)	1.25	0.19	126 (382)	1.29	0.17	172 (568)
1995	1.34	0.11	11 (24)				1.99	0.12	21 (80)	1.05	0.16	84 (302)	1.08	0.14	116 (406)
1996	1.38	0.15	4 (7)				1.48	0.09	23 (98)	1.39	0.16	79 (252)	1.39	0.15	106 (357)
1997	1.74	0.00	2 (4)				2.64	0.17	49 (329)	1.35	0.10	64 (188)	1.40	0.16	115 (521)
1998	0.00	0.00	0 (0)				1.45	0.23	165 (920)	1.20	0.16	66 (223)	1.21	0.22	231 (1,143)
1999	1.32	0.00	3 (3)				1.46	0.14	147 (953)	1.20	0.17	86 (281)	1.22	0.15	236 (1,237)

	Shore			Hbt			Cbt			Priv			Total		
Year	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N	WGT	CV	N
2000	1.35	0.05	5 (9)				1.39	0.11	170 (928)	0.91	0.16	65 (181)	0.96	0.12	240 (1,118)
2001	1.20	0.00	1 (1)				1.53	0.10	177 (995)	1.06	0.09	48 (114)	1.13	0.10	226 (1,110)
2002	1.05	0.00	5 (7)				1.33	0.10	283 (1,212)	0.87	0.11	69 (206)	0.92	0.10	357 (1,425)
2003	1.22	0.26	6 (7)				1.37	0.09	296 (1,608)	1.05	0.10	79 (209)	1.07	0.10	381 (1,824)
2004	1.09	0.00	6 (8)				1.22	0.10	247 (1,433)	1.08	0.09	123 (341)	1.09	0.09	376 (1,782)
2005	0.94	0.06	7 (13)				1.18	0.09	304 (1,378)	0.97	0.12	121 (311)	1.02	0.09	432 (1,702)
2006	0.85	0.07	9 (16)				1.12	0.12	178 (1,111)	1.12	0.09	196 (562)	1.11	0.11	383 (1,689)
2007	1.13	0.18	6 (6)				1.17	0.09	260 (1,438)	1.17	0.16	151 (478)	1.17	0.12	417 (1,922)
2008	0.96	0.41	4 (7)				1.19	0.14	246 (1,233)	1.15	0.09	137 (445)	1.15	0.14	387 (1,685)
2009	1.14	0.00	1 (1)				1.00	0.13	161 (741)	0.97	0.12	106 (258)	0.98	0.12	268 (1,000)
2010	1.03	0.00	1 (1)				1.11	0.08	228 (1,259)	1.16	0.09	111 (244)	1.15	0.08	340 (1,504)
2011	0.00	0.00	0 (0)				1.26	0.09	175 (975)	1.58	0.05	77 (201)	1.52	0.08	252 (1,176)
2012	1.15	0.00	2 (2)				1.18	0.08	250 (1,414)	1.09	0.18	83 (218)	1.11	0.11	335 (1,634)
2013	0.96	0.00	6 (10)				0.99	0.08	164 (979)	0.91	0.21	98 (391)	0.92	0.14	268 (1,380)
2014	1.04	0.10	7 (9)				1.21	0.10	201 (1,110)	1.00	0.21	170 (555)	1.03	0.16	378 (1,674)
2015	1.17	0.14	6 (6)				1.15	0.10	214 (1,180)	1.00	0.13	162 (514)	1.05	0.12	382 (1,700)
2016	1.10	0.00	2 (3)				1.15	0.11	175 (844)	0.94	0.12	116 (394)	0.99	0.11	293 (1,241)
2017	1.24	0.00	2 (2)				1.18	0.10	117 (639)	1.22	0.17	137 (528)	1.21	0.15	256 (1,169)
2018	1.11	0.19	5 (15)				1.31	0.12	115 (726)	0.86	0.11	125 (550)	0.92	0.12	245 (1,291)
2019	0.98	0.00	1 (1)				1.34	0.10	67 (359)	0.93	0.22	83 (246)	1.04	0.16	151 (606)
2020	1.36	0.15	5 (13)				1.47	0.16	101 (604)	0.91	0.17	77 (294)	1.00	0.17	183 (911)
2021	1.11	0.07	8 (12)				1.18	0.11	178 (843)	0.90	0.17	120 (403)	0.97	0.13	306 (1,258)
2022	0.62	0.08	7 (15)				1.30	0.11	145 (831)	1.24	0.20	136 (552)	1.19	0.16	288 (1,398)
2023	1.06	0.00	3 (4)				1.10	0.10	211 (1,148)	0.95	0.15	179 (657)	0.97	0.12	393 (1,809)

Table 10. Recreational Fishing Effort (in angler trips) for Gulf of Mexico and South Atlantic anglers by mode and year (MRIP, LACreel 2014+, TPWD). These effort estimates depict all (general) recreational fishing activity in the Gulf of Mexico and South Atlantic and are not specific to Yellowtail Snapper. Effort from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.

Year	Cbt	Hbt	Priv	Shore	Total
1981	937,737	199,301	24,932,254	58,915,097	84,984,389
1982	1,096,488	260,912	25,876,491	60,370,049	87,603,940
1983	1,129,823	256,493	27,066,252	67,065,970	95,518,538
1984	1,170,303	242,211	29,867,590	64,914,695	96,194,799
1985	1,237,699	277,516	28,915,108	63,865,191	94,295,514
1986	1,301,239		29,707,960	61,306,329	92,315,528
1987	1,268,157		30,681,682	62,787,677	94,737,516
1988	1,088,342		30,542,381	64,418,409	96,049,132
1989	1,299,317		31,914,532	65,516,250	98,730,099
1990	1,176,678		31,992,624	65,972,321	99,141,623
1991	1,153,451		33,919,035	73,544,378	108,616,864
1992	1,136,551		34,323,401	68,802,631	104,262,583
1993	1,248,630		35,985,526	70,029,474	107,263,630
1994	1,305,726		36,109,344	68,940,319	106,355,389
1995	1,414,614		35,672,285	63,290,203	100,377,102
1996	1,358,200		36,647,993	64,583,810	102,590,003
1997	1,343,951		38,440,465	65,828,662	105,613,078
1998	1,383,265		39,262,146	66,730,876	107,376,287
1999	1,335,167		42,072,769	70,613,822	114,021,758
2000	1,274,853		44,729,851	78,284,903	124,289,607
2001	1,364,759		46,011,877	79,201,471	126,578,107
2002	1,436,169		46,204,013	76,227,439	123,867,621
2003	1,357,818		48,759,521	78,468,721	128,586,060
2004	1,443,813		51,590,620	83,433,229	136,467,662
2005	1,300,754		51,282,169	81,218,770	133,801,693
2006	1,405,676		51,621,341	81,269,414	134,296,431
2007	1,491,872		53,180,757	81,357,208	136,029,837
2008	1,355,399		53,691,464	82,023,697	137,070,560
2009	1,332,280		53,787,465	81,125,805	136,245,550
2010	1,079,249		56,743,382	83,431,703	141,254,334
2011	1,266,104		54,724,378	83,415,201	139,405,683
2012	1,477,153		54,387,896	81,028,794	136,893,843

Year	Cbt	Hbt	Priv	Shore	Total
2013	1,393,436		52,110,630	84,109,579	137,613,645
2014	1,481,157		47,490,373	79,007,012	127,978,542
2015	1,684,721		45,214,624	79,385,169	126,284,514
2016	1,770,146		45,854,545	79,731,315	127,356,006
2017	1,763,899		46,642,179	86,976,678	135,382,756
2018	1,944,771		46,446,944	82,293,834	130,685,549
2019	2,265,351		41,965,266	74,988,140	119,218,757
2020	1,972,951		46,750,880	78,556,091	127,279,922
2021	2,312,887		44,415,320	82,508,589	129,236,796
2022	2,218,224		46,825,440	77,987,213	127,030,877
2023	2,572,589		46,979,419	85,847,135	135,399,143

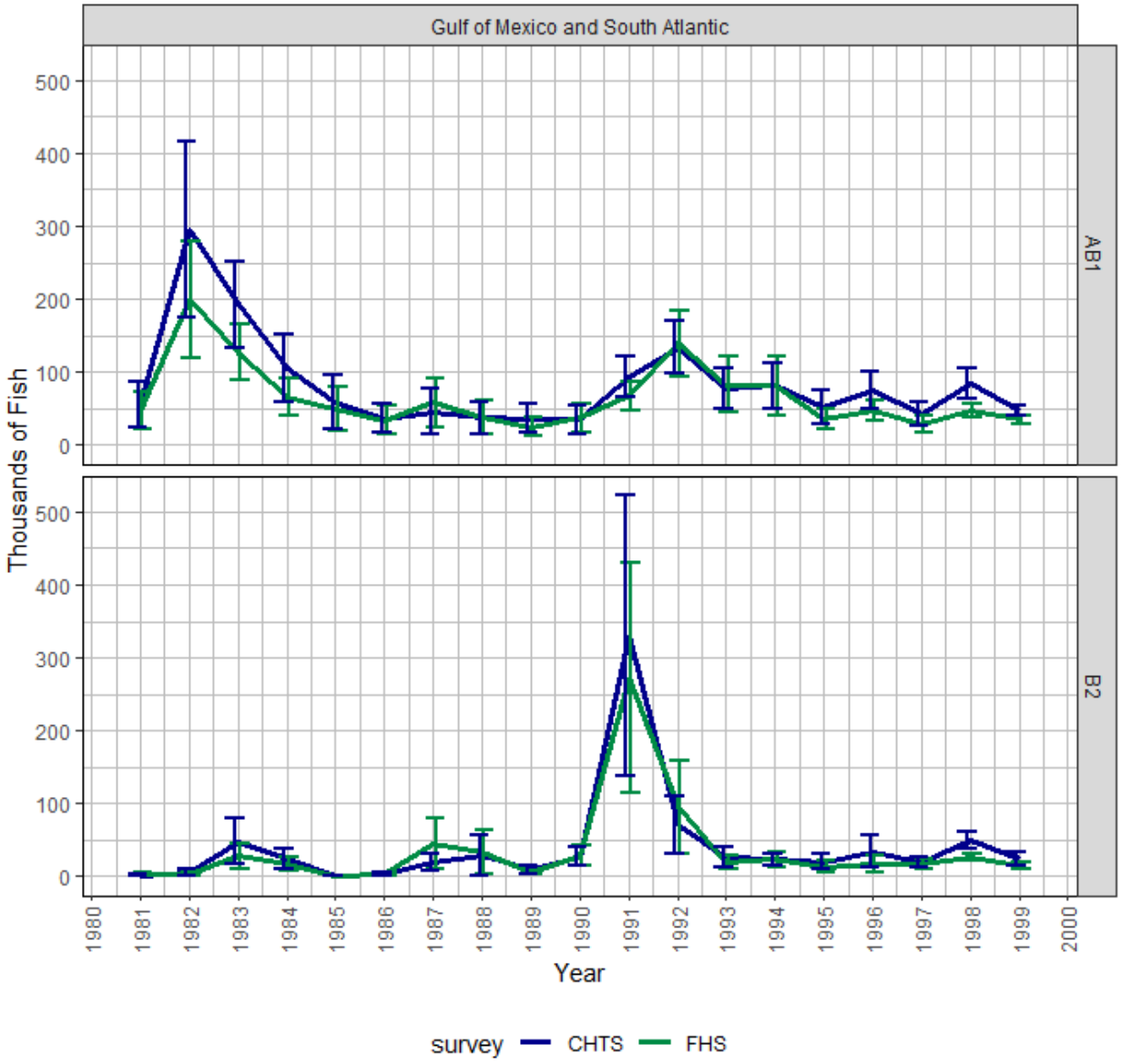


Figure 1. *Comparison of Charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Yellowtail Snapper from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Gulf of Mexico and South Atlantic between 1981 and 1999 (MRIP). The Charterboat calibration approach is discussed in Dettloff and Matter (2019a).*

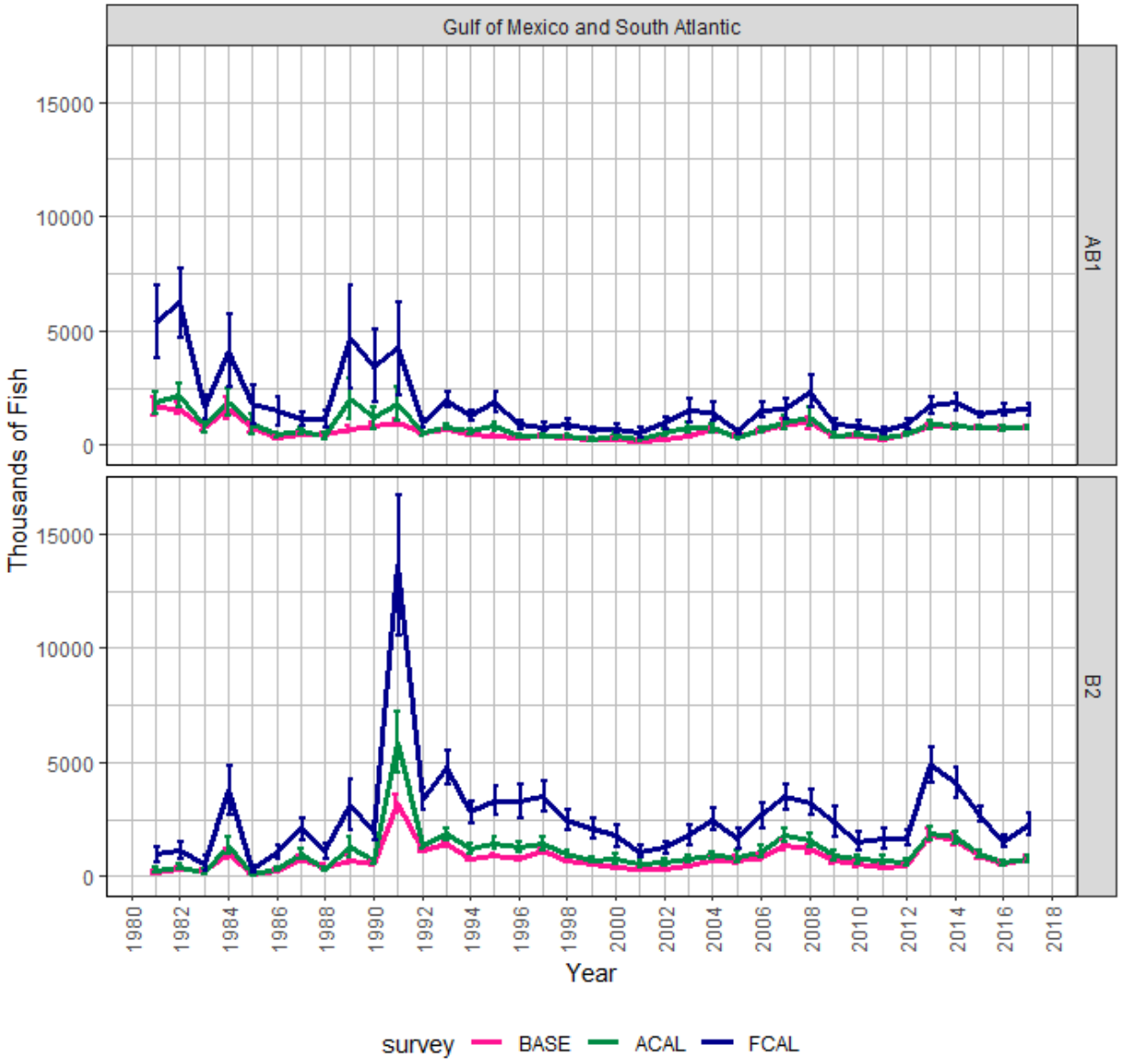


Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) estimates for Yellowtail Snapper in the Gulf of Mexico and South Atlantic between 1981 and 2017. (NMFS pers comm).*

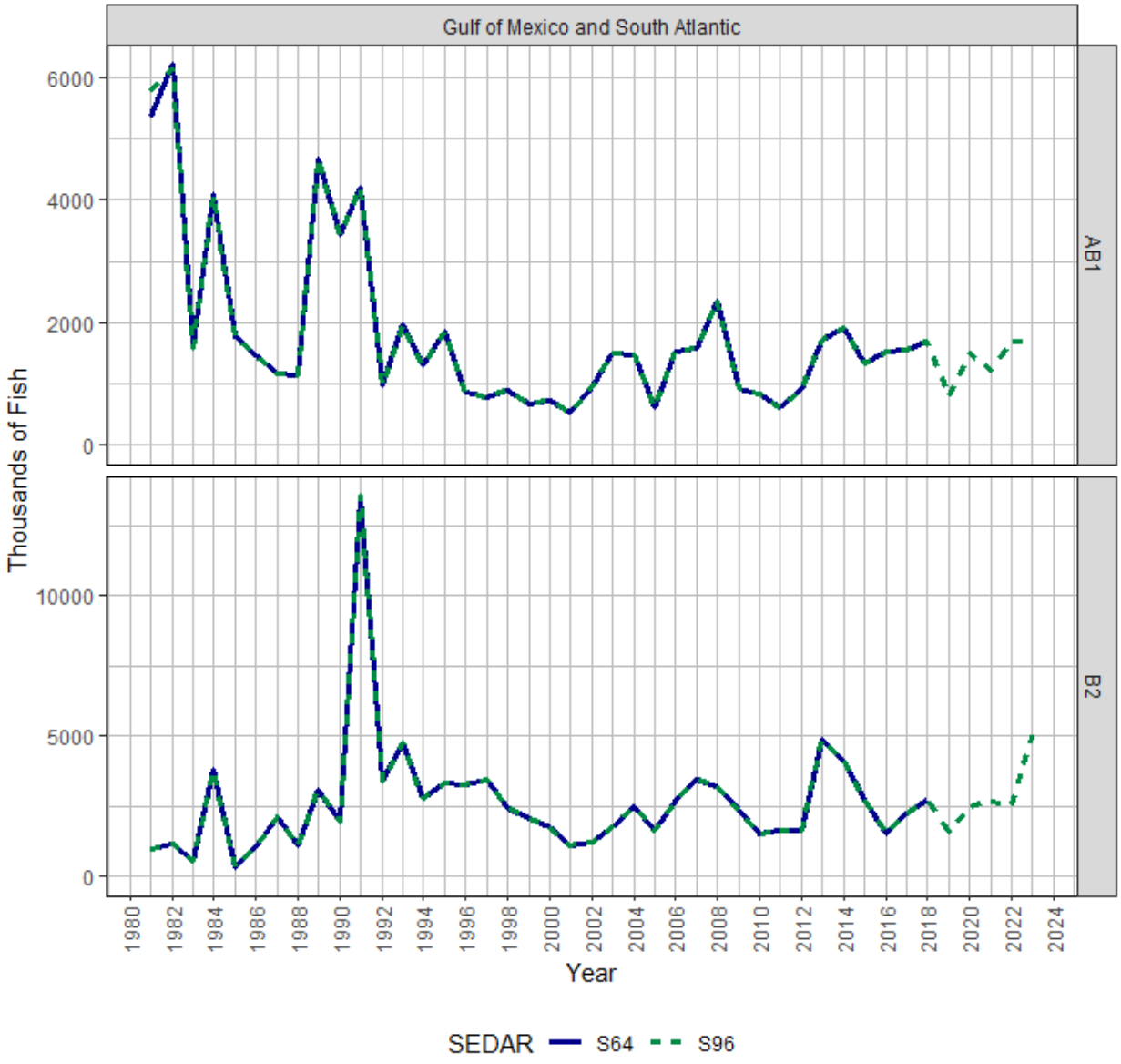


Figure 3. *Comparison of total general recreational landings (AB1) and discard estimates (B2) for Gulf of Mexico and South Atlantic Yellowtail Snapper between SEDAR 96 and SEDAR 64, the terminal years of which are 2023 and 2018 respectively.*

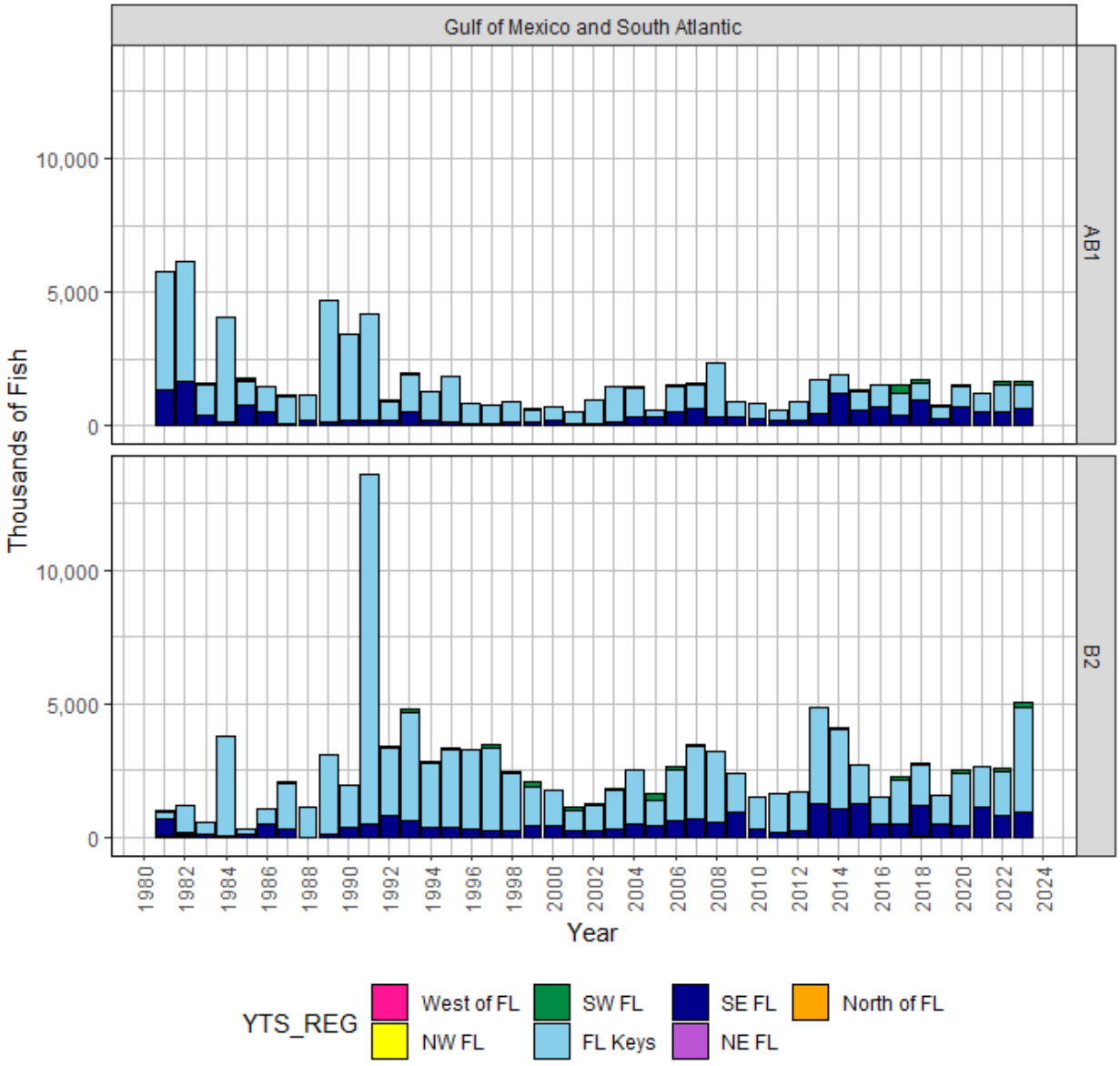


Figure 4. *Annual Yellowtail Snapper landings (AB1) and discards (B2), in thousands of fish, by YTS region from 1981 to 2023 (MRIP, LACreel 2014+, TPWD).*

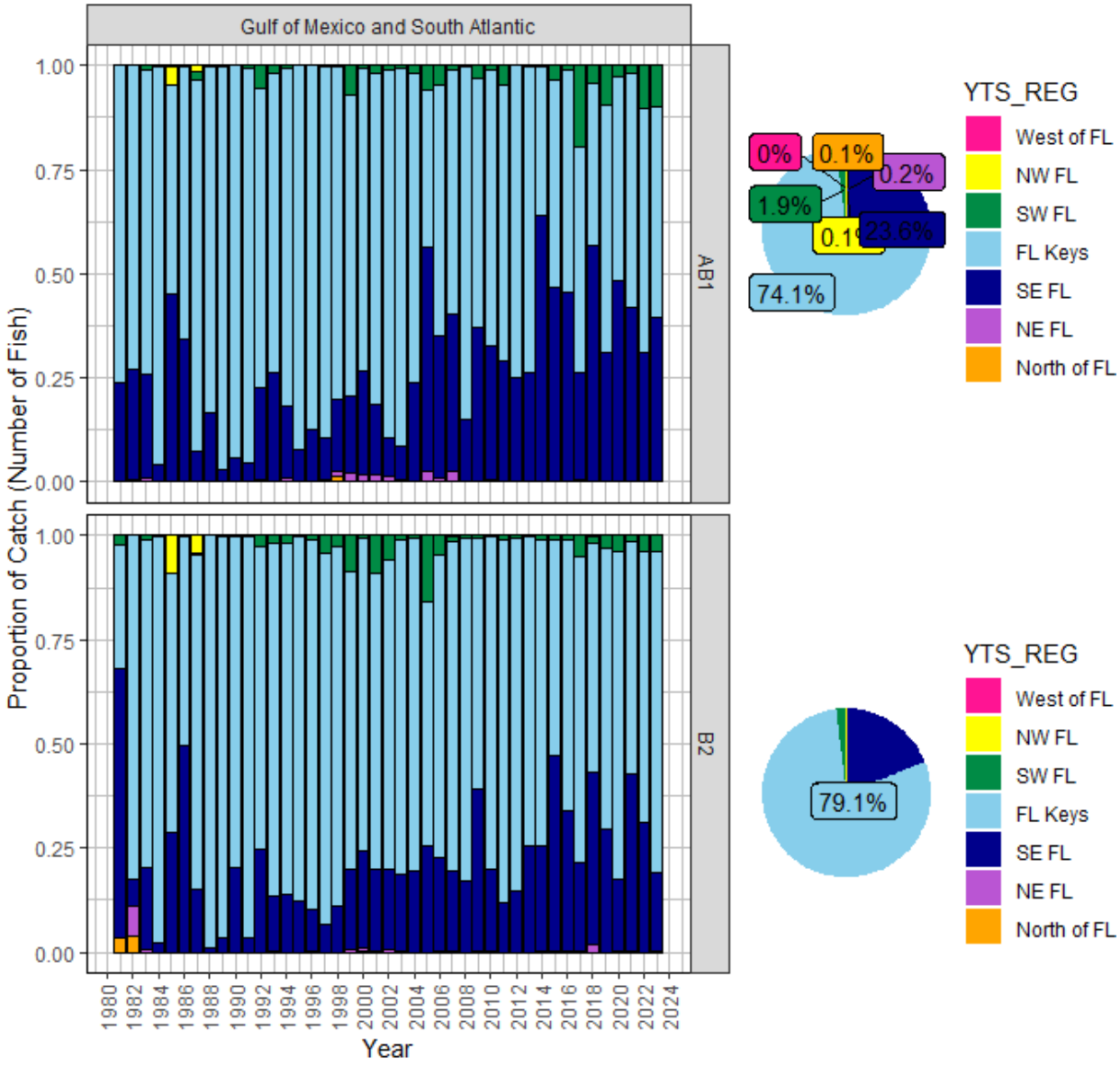


Figure 4a. *Proportion of Yellowtail Snapper landings (AB1) and discards (B2), in numbers of fish, from each YTS region by year (bar graph) and overall (pie chart) between 1981 and 2023 (MRIP, LACreel 2014+, TPWD).*

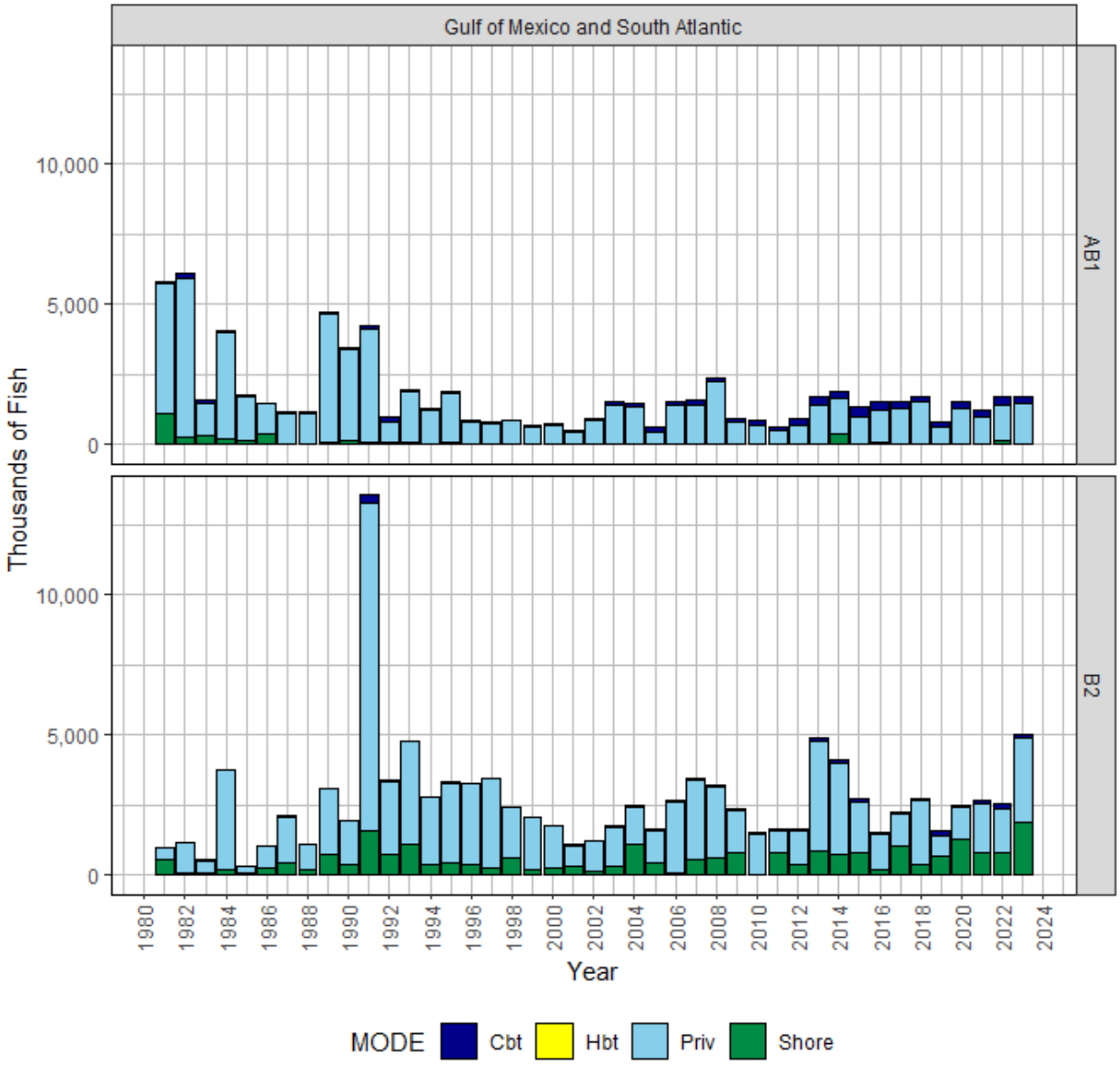


Figure 5. *Annual Yellowtail Snapper landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2023 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.*

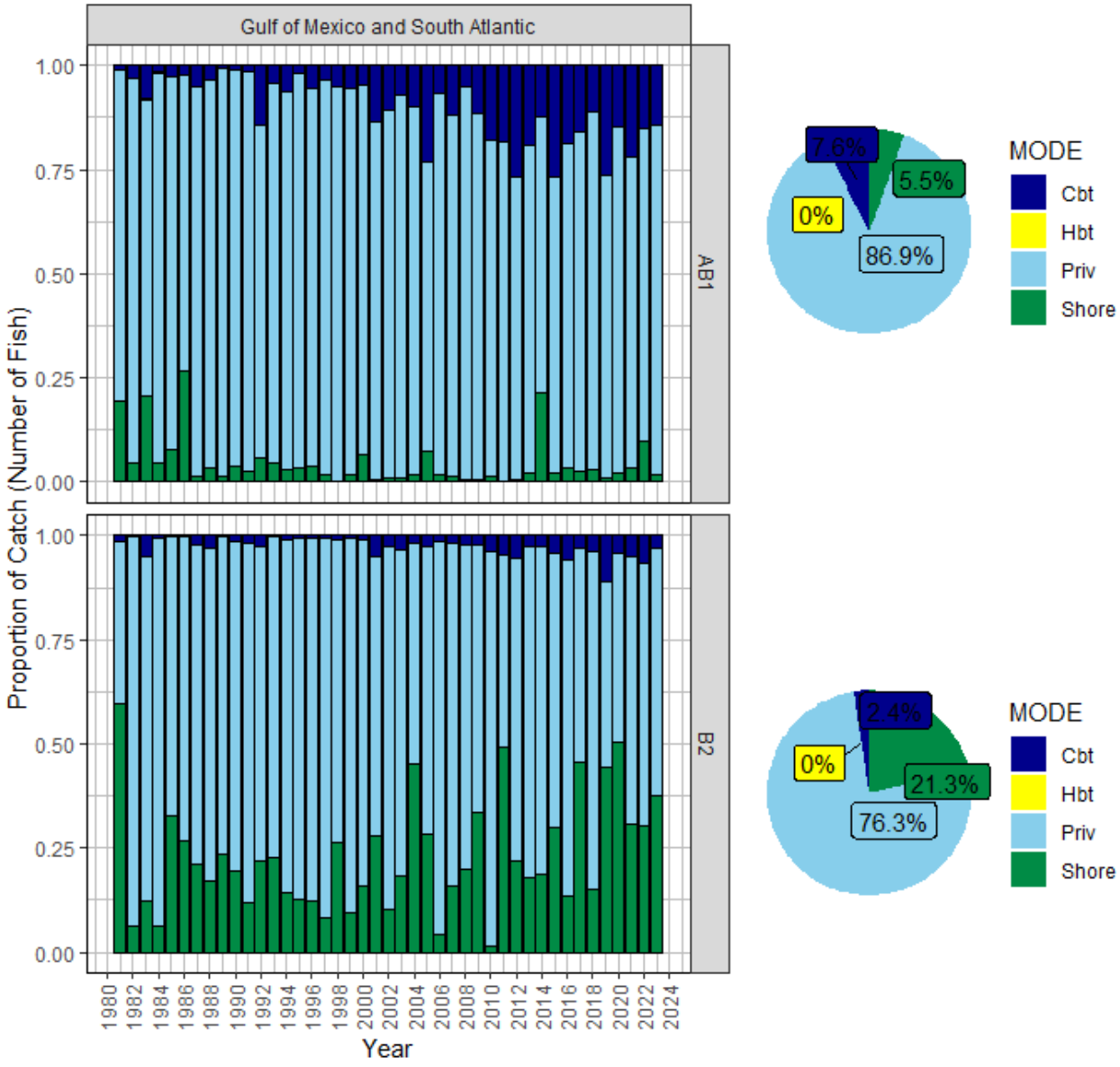


Figure 5a. *Proportion of Yellowtail Snapper landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2023 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode. MRIP Headboat estimates (1981-1985) are included from Texas to northeastern Florida.*

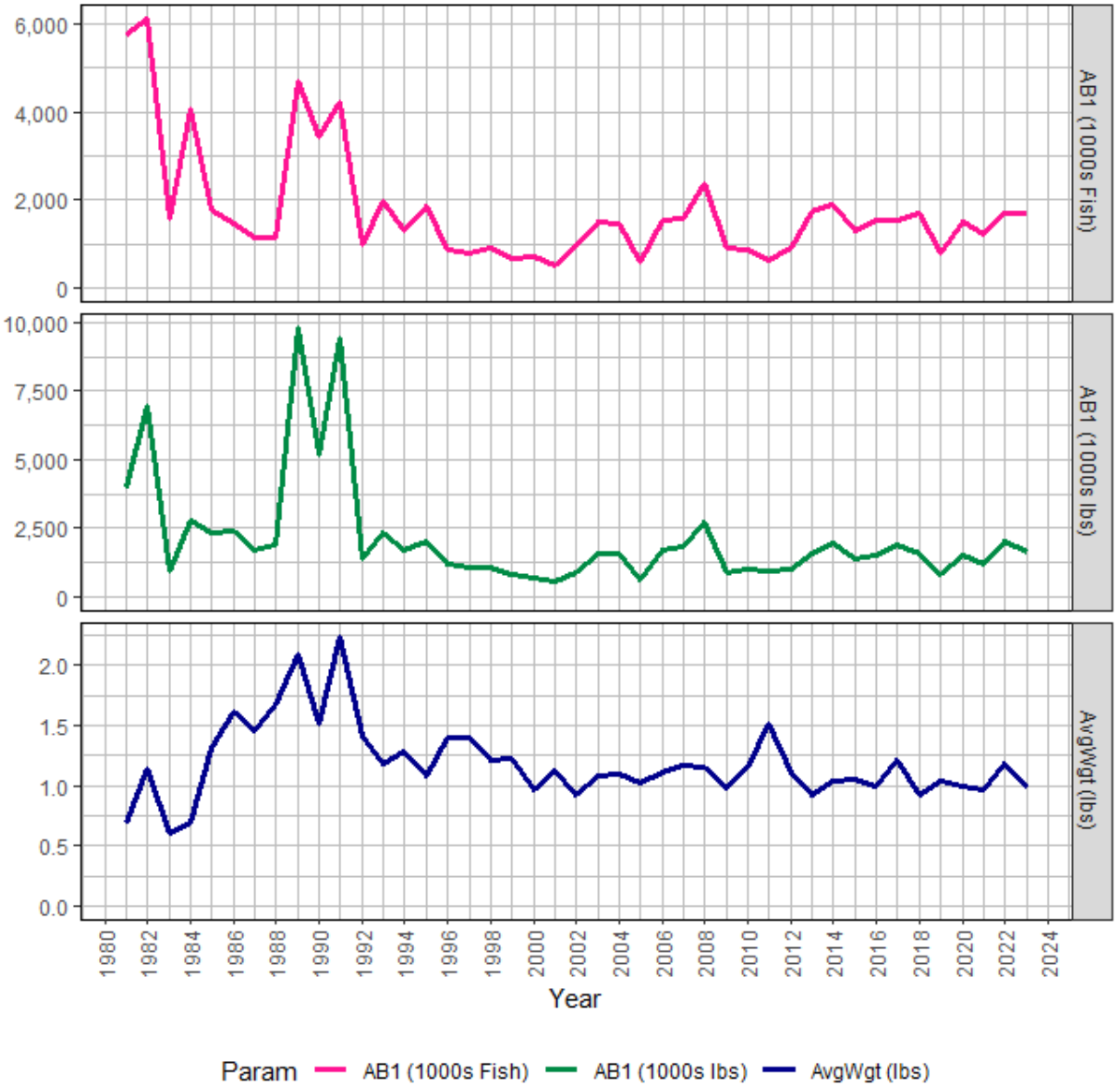


Figure 6. *Estimates of annual landings for Yellowtail Snapper in the Gulf of Mexico and South Atlantic (MRIP, LACreel 2014+, TPWD): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). See Appendix for average weight calculation methods.*

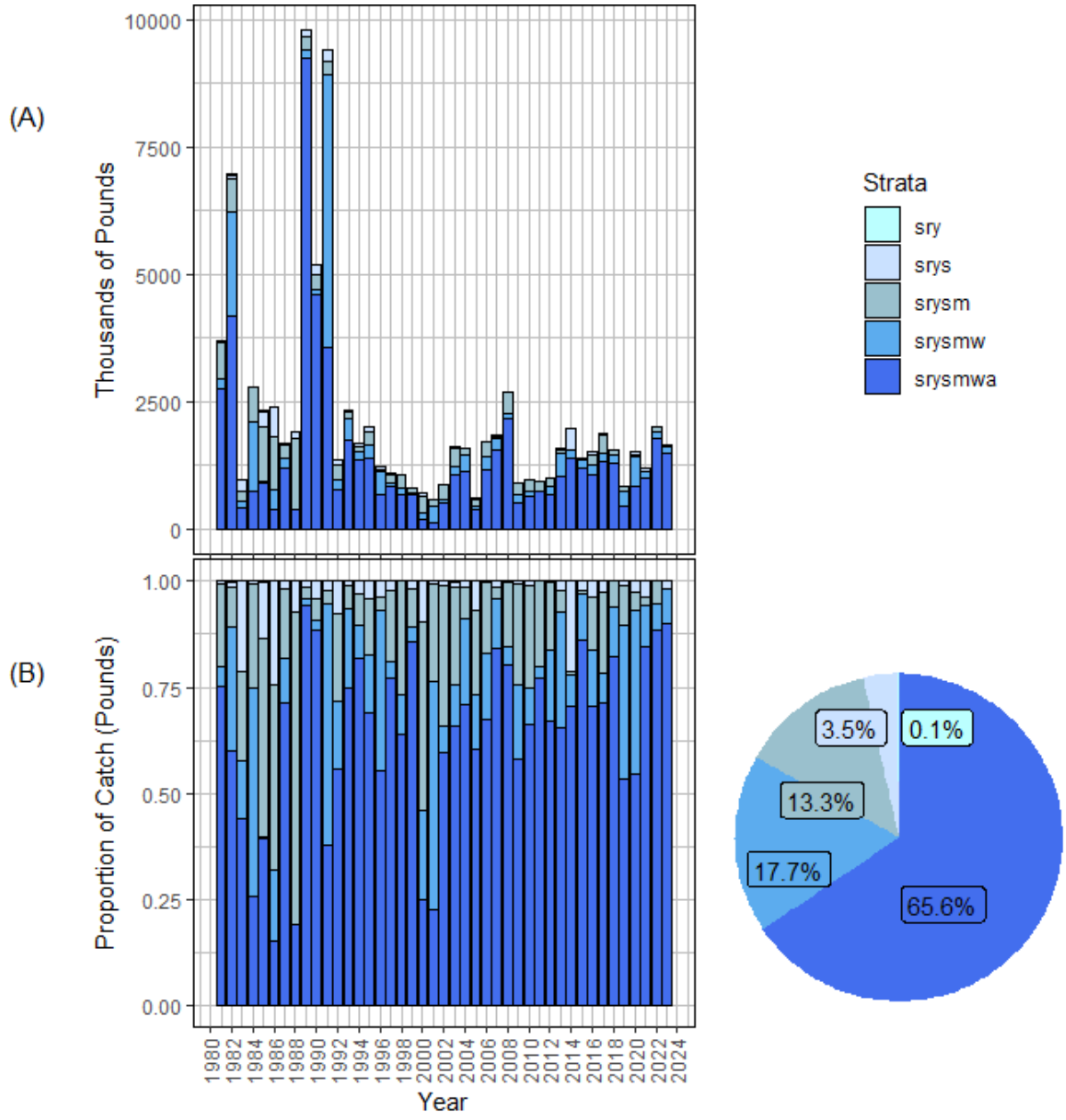


Figure 8. *Annual landings estimates of Gulf of Mexico and South Atlantic Yellowtail Snapper in thousands of pounds whole weight by hierarchy level (MRIP, LACreel 2014+, TPWD), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata at which average weights were estimated. As an example, (srysmw) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode, and* ***w****ave (i.e., weight observations collapsed across areas). Annual summaries include the number of fish and angler trips from which weight information was collected (N) and the landings-in-weight estimates (AB1.lbs) by hierarchy level. Landings are provided (A) in absolute pounds and (B) as a percentage of total landings-in-weight, which is summarized by year (stacked bar graph) and across all years (pie chart).*

(A)

Wave	Cbt RAW	Cbt IMP	Priv RAW	Priv IMP	Shore RAW	Shore IMP
1	20		33		9	
2	9	65		46	14	26
3	18	33	34	21	10	3
4	13		15		3	
5	15		23			
6	47		30		2	

(B)

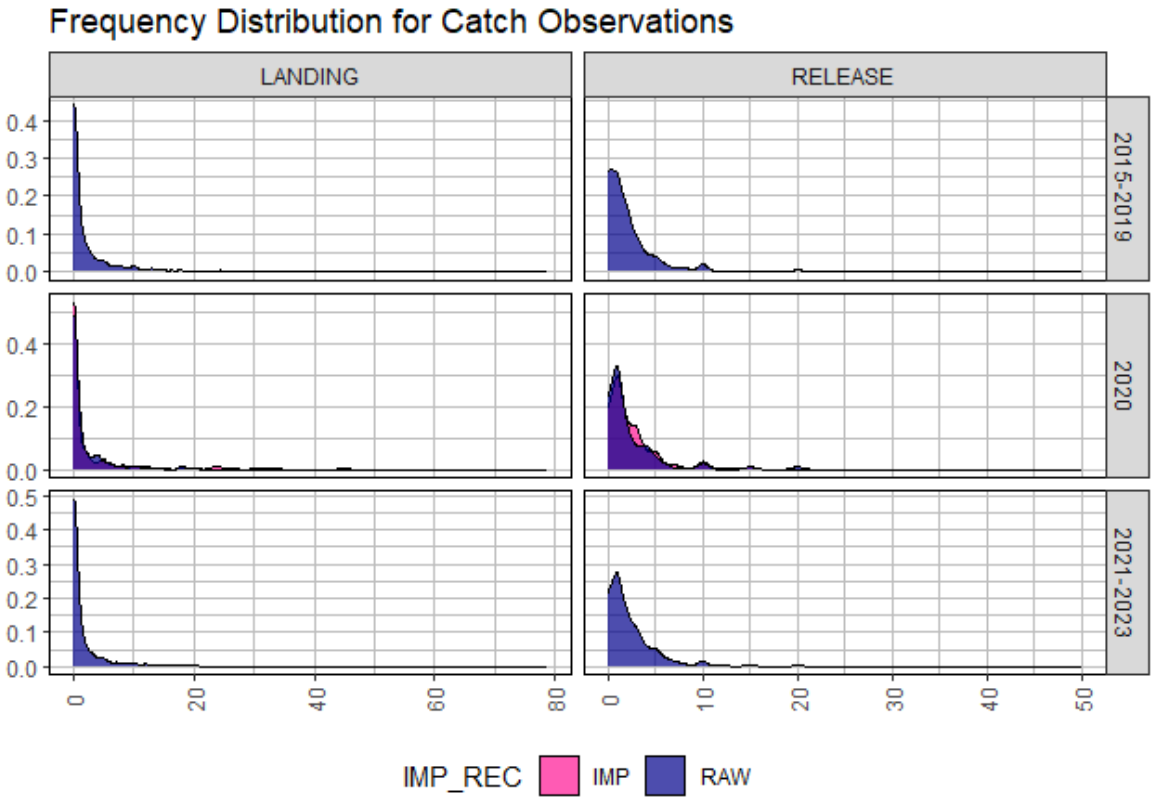


Figure 9. *COVID data gaps in the MRIP APAIS and associated imputations for (positive) fishing trips that intercepted Gulf of Mexico and South Atlantic Yellowtail Snapper. No 2020 data were imputed for the FES or FHS. (A) Number of positive intercepts in 2020 from the APAIS (RAW) vs. those imputed from intercepts in adjacent years (IMP). (B) Distribution of APAIS catch observations in years with no imputed catch data (in 2015-2019 and 2021-2023), 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 all Gulf of Mexico states and eastern Florida and 2004 for all Atlantic states north of Florida).
  - Papacostas and Foster (2021) provide descriptions of the approaches used by the Office of Science and Technology to calibrate MRIP (1) effort estimates derived from the legacy Coastal Household Telephone Survey (CHTS) into FES units for the private and shore modes and (2) catch rate estimates between the original and redesigned APAIS for all modes.
  - SEFSC calibrations of catch and effort estimates between CHTS and FHS units are calculated for the For-Hire mode by year, region, state, wave, and area fished according to Dettloff and Matter (2019a). Figure 1 summarizes the resultant scaling of CHTS catch estimates under the FHS calibration ratios.
- SEFSC Weight Estimation: Average (fish) weight estimates are calculated in whole weight by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019b). Size records above an allowable (max size) threshold are excluded from weight estimation and the summary tables included in this working paper (Tables 8-15). For SEDAR 96 Yellowtail Snapper, this includes any weights heavier than 9.4017 pounds.
- The MRIP time series starts in wave 2 of 1981. To impute 1981 wave 1 effort (Florida), the proportion of the wave 1 effort to that from other waves (2-6) in years 1982-1984 (by fishing mode and area) was multiplied by the total effort from waves 2-6 in 1981.
- 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 (1 = Florida panhandle, Escambia to

Dixie, 2 = western Florida, Levy to Collier, 3 = Florida Keys, Monroe, 4 = southeastern Florida, Miami-Dade to Indian River, 5 = northeastern Florida, Brevard to Nassau). For North Carolina, this includes domains north and south of Cape Hatteras.

- Between 1981 and 1985 in the Gulf of Mexico and South Atlantic, MRIP charter and headboat modes were combined into a single (for-hire) mode for estimation purposes. Since the NMFS Southeast Region Headboat Survey (SRHS) began in 1986 in the Gulf and 1981 in the South Atlantic, the MRIP combined for-hire mode must be split in these early years (1981-1985) to provide headboat landings estimates in the Gulf and to avoid double counting of headboat landings in the South Atlantic. Estimates for the MRIP for-hire mode (1981-1985) were split using a ratio of SRHS headboat angler trip estimates to MRIP charterboat angler trip estimates for 1986-1990, calculated by state (or state equivalent to match SRHS areas to MRIP states).