# General Recreational Survey Data for Yellowedge Grouper in the Gulf of Mexico

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SEDAR85-WP-03

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# SEDAR85-WP-03
# General Recreational Survey Data for Yellowedge Grouper in the Gulf of Mexico

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General recreational catch estimates for Yellowedge Grouper 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 Yellowedge Grouper. Size and age data from Louisiana (2014+) are not available for this assessment.

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Parameters for data prepared for SEDAR 85 recreational catch data:

- Species: Yellowedge Grouper
- Year Range: 1981 - 2021
- Geographic Range: Gulf of Mexico states from Texas to western Florida, excluding the Florida Keys.
    - The S85 assessment model aggregates the general recreational fleet, SRHS headboats, and commercial vertical line fishery into a single fishing fleet. Although this assessment separates the YEG stock into eastern vs. western components, this working paper does not provide spatial summaries of general recreational data to allow the lead assessment analyst to publish model inputs in the assessment report at the required resolution (e.g.,

landings by region) while avoiding confidentiality issues with SRHS headboat estimates.

- Fishing Modes: Charterboat, Private, Headboat, and Shore,
- MRIP Survey Methodology: 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)
- MRIP Data Gaps from COVID: No data were imputed for 2020.
- 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 6-11). For SEDAR 85 Yellowedge Grouper, this includes any weights heavier than 42.966 pounds whole weight.

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Catch and Sample Size Information for Particular Domains:

Domains were selected based on strata-level catch estimates (year-state-mode-wave-area) that have a disproportionately large contribution to those total (annual) catch estimates that appear relatively large/small, as compared to adjacent years. Selected domains are more likely to be high catch estimates given the inherent zero-boundary constraint in all catch/effort data (>= 0) that complicates identification of low catch estimates.

- 1982 landings estimate: 74,527 fish
  - Strata: FLW, Private, Wave 3, and Ocean > 3 miles
  - Intercept Records: a total of 1 angler trip resulted in a landings estimate of 74,527 fish
    - One angler trip harvested 15 Yellowedge Grouper (*NOT* seen by interviewer)
- 1991 discard estimate: 12,768 fish
  - Strata: FLW, MODE, Wave 3, and Ocean <= 10 miles
  - Intercept Records: a total of 1 angler trip resulted in a discard estimate of 12,768 fish
    - One angler trip released 7 live Yellowedge Grouper
- 2005 landings estimate: 11,369 fish
  - Strata: AL, Private, WAVE 1, and Ocean > 3 miles
  - Intercept Records: a total of 1 angler trip resulted in a landings estimate of 10,631 fish
    - 1 angler trip harvested 6 Yellowedge Grouper (seen by interviewer)

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Tables

**Table 1.** Annual landings (AB1) and discards (B2) of Yellowedge Grouper in numbers of fish by mode 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.

**Table 2.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

**Table 3.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

**Table 4.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

**Table 5.** Yellowedge Grouper 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).

**Table 6.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Yellowedge Grouper by mode and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.

**Table 7.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Yellowedge Grouper 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.

**Table 8.** Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Yellowedge Grouper 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.

**Table 9.** Summary of length measurements (millimeters total length) from TPWD-intercepted Yellowedge Grouper by mode and year. Summaries include the number of fish measured by TPWD and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.

**Table 10.** Estimated average weights of landed Yellowedge Grouper 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 (Table 5) divided by estimates of landings-in-number (Table 1). Sample size (N) is provided as the total number of angler trips and, in parentheses, number of fish from which weight information was collected.

**Table 11.** Resolution of landings-in-weight estimates (pounds whole weight) for Gulf of Mexico Yellowedge Grouper by year and hierarchy level (MRIP, LACreel 2014+, TPWD), defined by **s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, **w**ave, and **a**rea. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019b). Larger sample sizes therefore allow average weights to be calculated at finer stratifications, the finest being at the srysmwa level (Matter and Rios 2013). Annual summaries include the number of fish and angler trips (in parentheses) from which weight information was collected (N) and the landings-in-weight estimates (AB1.lbs) by hierarchy level. As an example, (srys) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **s**pecies, **r**egion, **y**ear, and **s**tate (i.e., weight observations collapsed across modes, waves, and areas).

**Table 12.** Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by mode and year (MRIP, LACreel 2014+, TPWD). These effort estimates depict all (general) recreational fishing activity in the Gulf of Mexico and are not specific to Yellowedge Grouper. Effort from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.

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Figures

**Figure 1.** Comparison of Charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Yellowedge Grouper from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Gulf of Mexico 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) catch estimates for Yellowedge Grouper in the Gulf of Mexico between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include the Florida Keys as that domain is not separable from those used by the MRIP online comparison tool for the Gulf of Mexico (NMFS). 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 Gulf of Mexico Yellowedge Grouper between SEDAR 85 and SEDAR 22, the terminal years of which are 2021 and 2009 respectively. Differences in catch estimates, which are in thousands of fish, are largely a function of changes in the MRIP survey (e.g., redesigned APAIS in 2013, FES in 2018).

**Figure 4a.** Annual Yellowedge Grouper landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP, LACreel 2014+, TPWD). Note catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode.

**Figure 4b.** Percent of Yellowedge Grouper landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2021 (MRIP, LACreel 2014+, TPWD). Note catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode.

**Figure 5.** Estimates of annual landings for Yellowedge Grouper in the Gulf of Mexico (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). Average weight estimates are calculated 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).

**Figure 6.** Annual landings estimates of Gulf of Mexico Yellowedge Grouper 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, the finest stratification being at the srysmwa level (Matter and Rios 2013). As an example, (srys) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **s**pecies, **r**egion, **y**ear, and **s**tate (i.e., weight observations collapsed across modes, waves, and areas). Landings are provided (A) in absolute pounds and (B) as a percentage of total landings-in-weight, which is summarized by year (stacked bar plot) and across all years (pie chart).

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Appendices

**Appendix A**. Additional Details of Survey Data and SEFSC Estimation

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**Table 1.** Annual landings (AB1) and discards (B2) of Yellowedge Grouper in numbers of fish by mode 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.

| | Cbt | | Priv | | Total | |
|---|---|---|---|---|---|---|
| Year | AB1 | B2 | AB1 | B2 | AB1 | B2 |
| 1982 | 0 | 0 | 74,527 | 0 | 74,527 | 0 |
| 1984 | 0 | 0 | 23 | 0 | 23 | 0 |
| 1986 | 0 | 0 | 42 | 0 | 42 | 0 |
| 1989 | 0 | 0 | 3,348 | 0 | 3,348 | 0 |
| 1991 | 0 | 0 | 0 | 12,768 | 0 | 12,768 |
| 1993 | 1,451 | 0 | 0 | 0 | 1,451 | 0 |
| 1994 | 0 | 41 | 0 | 0 | 0 | 41 |
| 1996 | 0 | 0 | 0 | 1,041 | 0 | 1,041 |
| 1997 | 307 | 0 | 0 | 1,516 | 307 | 1,516 |
| 1998 | 807 | 0 | 0 | 0 | 807 | 0 |
| 1999 | 405 | 1,016 | 0 | 0 | 405 | 1,016 |
| 2001 | 150 | 0 | 0 | 0 | 150 | 0 |
| 2002 | 243 | 0 | 0 | 0 | 243 | 0 |
| 2003 | 18 | 0 | 0 | 0 | 18 | 0 |
| 2004 | 125 | 0 | 0 | 0 | 125 | 0 |
| 2005 | 738 | 0 | 10,631 | 0 | 11,369 | 0 |
| 2006 | 266 | 0 | 0 | 0 | 266 | 0 |
| 2007 | 34 | 0 | 0 | 0 | 34 | 0 |
| 2008 | 42 | 0 | 0 | 0 | 42 | 0 |
| 2009 | 93 | 0 | 187 | 0 | 281 | 0 |
| 2011 | 1,033 | 0 | 0 | 0 | 1,033 | 0 |
| 2012 | 97 | 0 | 0 | 0 | 97 | 0 |
| 2013 | 224 | 0 | 324 | 0 | 548 | 0 |
| 2014 | 380 | 0 | 1,278 | 0 | 1,658 | 0 |
| 2015 | 83 | 0 | 1,281 | 0 | 1,364 | 0 |
| 2016 | 242 | 0 | 116 | 0 | 358 | 0 |
| 2017 | 75 | 0 | 16 | 0 | 91 | 0 |
| 2018 | 284 | 0 | 3,747 | 0 | 4,031 | 0 |
| 2019 | 4,126 | 0 | 2,835 | 0 | 6,961 | 0 |
| 2020 | 1,124 | 0 | 2,573 | 0 | 3,697 | 0 |
| 2021 | 161 | 0 | 1,593 | 0 | 1,754 | 0 |

**Table 2.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

| | Cbt | | | | Hbt | | | | Priv | | | | Shore | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp |
| 1981 | 0 | 0.00 | 76 (0) | 610 (0) | 0 | 0.00 | 76 (0) | 610 (0) | 0 | 0.00 | 221 (0) | 1,780 (0) | 0 | 0.00 | 324 (0) | 1,942 (0) |
| 1982 | 0 | 0.00 | 76 (0) | 597 (0) | 0 | 0.00 | 76 (0) | 597 (0) | 74,527 | 1.00 | 467 (1) | 3,773 (1) | 0 | 0.00 | 538 (0) | 3,727 (0) |
| 1983 | 0 | 0.00 | 232 (0) | 1,560 (0) | 0 | 0.00 | 123 (0) | 1,357 (0) | 0 | 0.00 | 739 (0) | 7,100 (0) | 0 | 0.00 | 372 (0) | 2,603 (0) |
| 1984 | 0 | 0.00 | 190 (0) | 1,668 (0) | 0 | 0.00 | 116 (0) | 1,518 (0) | 23 | 0.22 | 752 (1) | 5,588 (1) | 0 | 0.00 | 377 (0) | 2,906 (0) |
| 1985 | 0 | 0.00 | 196 (0) | 1,476 (0) | 0 | 0.00 | 89 (0) | 1,260 (0) | 0 | 0.00 | 902 (0) | 7,611 (0) | 0 | 0.00 | 497 (0) | 3,606 (0) |
| 1986 | 0 | 0.00 | 426 (0) | 2,672 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 42 | 0.28 | 1,754 (1) | 14,258 (1) | 0 | 0.00 | 424 (0) | 2,082 (0) |
| 1987 | 0 | 0.00 | 397 (0) | 2,475 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,773 (0) | 15,007 (0) | 0 | 0.00 | 371 (0) | 2,158 (0) |
| 1988 | 0 | 0.00 | 389 (0) | 2,012 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,865 (0) | 15,264 (0) | 0 | 0.00 | 601 (0) | 3,609 (0) |
| 1989 | 0 | 0.00 | 353 (0) | 1,671 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 3,348 | 1.00 | 1,395 (1) | 11,106 (1) | 0 | 0.00 | 422 (0) | 2,936 (0) |
| 1990 | 0 | 0.00 | 251 (0) | 1,219 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,167 (0) | 8,598 (0) | 0 | 0.00 | 383 (0) | 2,498 (0) |
| 1991 | 0 | 0.00 | 338 (0) | 1,791 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,246 (0) | 10,364 (0) | 0 | 0.00 | 429 (0) | 2,811 (0) |
| 1992 | 0 | 0.00 | 523 (0) | 3,283 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,906 (0) | 19,736 (0) | 0 | 0.00 | 846 (0) | 5,746 (0) |
| 1993 | 1,451 | 1.00 | 345 (1) | 1,831 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,572 (0) | 16,403 (0) | 0 | 0.00 | 899 (0) | 7,497 (0) |
| 1994 | 0 | 0.00 | 390 (0) | 1,970 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,640 (0) | 19,134 (0) | 0 | 0.00 | 895 (0) | 8,948 (0) |
| 1995 | 0 | 0.00 | 370 (0) | 1,811 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,501 (0) | 17,396 (0) | 0 | 0.00 | 742 (0) | 8,011 (0) |
| 1996 | 0 | 0.00 | 445 (0) | 2,012 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,808 (0) | 19,576 (0) | 0 | 0.00 | 703 (0) | 5,607 (0) |
| 1997 | 307 | 1.00 | 603 (1) | 2,793 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,731 (0) | 19,990 (0) | 0 | 0.00 | 654 (0) | 5,719 (0) |
| 1998 | 807 | 0.79 | 879 (3) | 4,983 (3) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,897 (0) | 22,440 (0) | 0 | 0.00 | 757 (0) | 6,598 (0) |
| 1999 | 405 | 0.57 | 1,157 (4) | 7,919 (4) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,442 (0) | 28,056 (0) | 0 | 0.00 | 937 (0) | 8,775 (0) |
| 2000 | 0 | 0.00 | 1,183 (0) | 9,761 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,233 (0) | 24,056 (0) | 0 | 0.00 | 843 (0) | 7,275 (0) |
| 2001 | 150 | 0.54 | 1,035 (4) | 8,268 (4) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,093 (0) | 24,695 (0) | 0 | 0.00 | 798 (0) | 7,364 (0) |
| 2002 | 243 | 0.88 | 1,034 (2) | 8,664 (2) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,165 (0) | 25,906 (0) | 0 | 0.00 | 787 (0) | 7,485 (0) |
| 2003 | 18 | 1.00 | 1,156 (1) | 9,498 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,328 (0) | 25,573 (0) | 0 | 0.00 | 920 (0) | 8,029 (0) |
| 2004 | 125 | 1.00 | 1,151 (1) | 10,429 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,130 (0) | 24,695 (0) | 0 | 0.00 | 692 (0) | 6,486 (0) |

| | Cbt | | | | Hbt | | | | Priv | | | | Shore | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp | AB1 | CV | PSU | Trp |
| 2005 | 738 | 0.92 | 958 (2) | 8,372 (2) | 0 | 0.00 | 0 (0) | 0 (0) | 10,631 | 1.00 | 1,992 (1) | 22,721 (1) | 0 | 0.00 | 657 (0) | 6,422 (0) |
| 2006 | 266 | 0.80 | 907 (2) | 7,193 (3) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,295 (0) | 25,207 (0) | 0 | 0.00 | 724 (0) | 6,551 (0) |
| 2007 | 34 | 1.00 | 934 (1) | 7,302 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,245 (0) | 24,782 (0) | 0 | 0.00 | 755 (0) | 6,773 (0) |
| 2008 | 42 | 1.00 | 844 (1) | 5,811 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,392 (0) | 25,619 (0) | 0 | 0.00 | 763 (0) | 6,695 (0) |
| 2009 | 93 | 0.72 | 825 (2) | 5,603 (2) | 0 | 0.00 | 0 (0) | 0 (0) | 187 | 1.00 | 2,428 (1) | 26,727 (1) | 0 | 0.00 | 813 (0) | 7,343 (0) |
| 2010 | 0 | 0.00 | 801 (0) | 5,316 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,385 (0) | 24,592 (0) | 0 | 0.00 | 756 (0) | 7,281 (0) |
| 2011 | 1,033 | 1.00 | 970 (1) | 7,101 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,530 (0) | 26,143 (0) | 0 | 0.00 | 786 (0) | 7,159 (0) |
| 2012 | 97 | 1.00 | 1,048 (1) | 8,231 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,685 (0) | 26,630 (0) | 0 | 0.00 | 843 (0) | 8,045 (0) |
| 2013 | 224 | 0.90 | 689 (2) | 3,725 (2) | 0 | 0.00 | 0 (0) | 0 (0) | 324 | 1.00 | 2,357 (1) | 23,384 (1) | 0 | 0.00 | 637 (0) | 6,432 (0) |
| 2014 | 380 | 0.65 | 1,277 (5) | 6,924 (5) | 0 | 0.00 | 0 (0) | 0 (0) | 1,278 | 0.38 | 3,347 (7) | 30,158 (7) | 0 | 0.00 | 758 (0) | 5,743 (0) |
| 2015 | 83 | 0.76 | 1,405 (2) | 7,527 (2) | 0 | 0.00 | 0 (0) | 0 (0) | 1,281 | 0.44 | 3,490 (8) | 30,168 (8) | 0 | 0.00 | 729 (0) | 5,322 (0) |
| 2016 | 242 | 0.62 | 1,476 (5) | 7,130 (5) | 0 | 0.00 | 0 (0) | 0 (0) | 116 | 0.26 | 3,635 (5) | 31,259 (5) | 0 | 0.00 | 1,014 (0) | 5,845 (0) |
| 2017 | 75 | 0.92 | 1,416 (1) | 7,266 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 16 | 0.77 | 3,328 (1) | 29,099 (1) | 0 | 0.00 | 864 (0) | 5,314 (0) |
| 2018 | 284 | 0.64 | 1,444 (8) | 7,803 (8) | 0 | 0.00 | 0 (0) | 0 (0) | 3,747 | 0.89 | 3,209 (6) | 25,140 (6) | 0 | 0.00 | 873 (0) | 5,624 (0) |
| 2019 | 4,126 | 0.50 | 1,524 (12) | 7,652 (13) | 0 | 0.00 | 0 (0) | 0 (0) | 2,835 | 0.80 | 3,246 (6) | 26,031 (7) | 0 | 0.00 | 870 (0) | 5,360 (0) |
| 2020 | 1,124 | 0.75 | 1,450 (9) | 7,356 (9) | 0 | 0.00 | 0 (0) | 0 (0) | 2,573 | 0.57 | 3,356 (8) | 29,301 (9) | 0 | 0.00 | 887 (0) | 5,407 (0) |
| 2021 | 161 | 1.00 | 1,658 (1) | 9,838 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 1,593 | 0.46 | 3,221 (6) | 22,414 (7) | 0 | 0.00 | 931 (0) | 6,946 (0) |

**Table 3.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

| | Cbt | | | | Hbt | | | | Priv | | | | Shore | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp |
| 1981 | 0 | 0.00 | 76 (0) | 610 (0) | 0 | 0.00 | 76 (0) | 610 (0) | 0 | 0.00 | 221 (0) | 1,780 (0) | 0 | 0.00 | 324 (0) | 1,942 (0) |
| 1982 | 0 | 0.00 | 76 (0) | 597 (0) | 0 | 0.00 | 76 (0) | 597 (0) | 0 | 0.00 | 467 (0) | 3,773 (0) | 0 | 0.00 | 538 (0) | 3,727 (0) |
| 1983 | 0 | 0.00 | 232 (0) | 1,560 (0) | 0 | 0.00 | 123 (0) | 1,357 (0) | 0 | 0.00 | 739 (0) | 7,100 (0) | 0 | 0.00 | 372 (0) | 2,603 (0) |
| 1984 | 0 | 0.00 | 190 (0) | 1,668 (0) | 0 | 0.00 | 116 (0) | 1,518 (0) | 0 | 0.00 | 752 (0) | 5,588 (0) | 0 | 0.00 | 377 (0) | 2,906 (0) |
| 1985 | 0 | 0.00 | 196 (0) | 1,476 (0) | 0 | 0.00 | 89 (0) | 1,260 (0) | 0 | 0.00 | 902 (0) | 7,611 (0) | 0 | 0.00 | 497 (0) | 3,606 (0) |
| 1986 | 0 | 0.00 | 426 (0) | 2,672 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,754 (0) | 14,258 (0) | 0 | 0.00 | 424 (0) | 2,082 (0) |
| 1987 | 0 | 0.00 | 397 (0) | 2,475 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,773 (0) | 15,007 (0) | 0 | 0.00 | 371 (0) | 2,158 (0) |
| 1988 | 0 | 0.00 | 389 (0) | 2,012 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,865 (0) | 15,264 (0) | 0 | 0.00 | 601 (0) | 3,609 (0) |
| 1989 | 0 | 0.00 | 353 (0) | 1,671 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,395 (0) | 11,106 (0) | 0 | 0.00 | 422 (0) | 2,936 (0) |
| 1990 | 0 | 0.00 | 251 (0) | 1,219 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,167 (0) | 8,598 (0) | 0 | 0.00 | 383 (0) | 2,498 (0) |
| 1991 | 0 | 0.00 | 338 (0) | 1,791 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 12,768 | 1.00 | 1,246 (1) | 10,364 (1) | 0 | 0.00 | 429 (0) | 2,811 (0) |
| 1992 | 0 | 0.00 | 523 (0) | 3,283 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,906 (0) | 19,736 (0) | 0 | 0.00 | 846 (0) | 5,746 (0) |
| 1993 | 0 | 0.00 | 345 (0) | 1,831 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,572 (0) | 16,403 (0) | 0 | 0.00 | 899 (0) | 7,497 (0) |
| 1994 | 41 | 1.00 | 390 (1) | 1,970 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,640 (0) | 19,134 (0) | 0 | 0.00 | 895 (0) | 8,948 (0) |
| 1995 | 0 | 0.00 | 370 (0) | 1,811 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,501 (0) | 17,396 (0) | 0 | 0.00 | 742 (0) | 8,011 (0) |
| 1996 | 0 | 0.00 | 445 (0) | 2,012 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 1,041 | 1.00 | 1,808 (1) | 19,576 (1) | 0 | 0.00 | 703 (0) | 5,607 (0) |
| 1997 | 0 | 0.00 | 603 (0) | 2,793 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 1,516 | 1.00 | 1,731 (1) | 19,990 (1) | 0 | 0.00 | 654 (0) | 5,719 (0) |
| 1998 | 0 | 0.00 | 879 (0) | 4,983 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,897 (0) | 22,440 (0) | 0 | 0.00 | 757 (0) | 6,598 (0) |
| 1999 | 1,016 | 1.00 | 1,157 (1) | 7,919 (1) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,442 (0) | 28,056 (0) | 0 | 0.00 | 937 (0) | 8,775 (0) |
| 2000 | 0 | 0.00 | 1,183 (0) | 9,761 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,233 (0) | 24,056 (0) | 0 | 0.00 | 843 (0) | 7,275 (0) |
| 2001 | 0 | 0.00 | 1,035 (0) | 8,268 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,093 (0) | 24,695 (0) | 0 | 0.00 | 798 (0) | 7,364 (0) |
| 2002 | 0 | 0.00 | 1,034 (0) | 8,664 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,165 (0) | 25,906 (0) | 0 | 0.00 | 787 (0) | 7,485 (0) |
| 2003 | 0 | 0.00 | 1,156 (0) | 9,498 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,328 (0) | 25,573 (0) | 0 | 0.00 | 920 (0) | 8,029 (0) |
| 2004 | 0 | 0.00 | 1,151 (0) | 10,429 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,130 (0) | 24,695 (0) | 0 | 0.00 | 692 (0) | 6,486 (0) |

| | Cbt | | | | Hbt | | | | Priv | | | | Shore | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp | B2 | CV | PSU | Trp |
| 2005 | 0 | 0.00 | 958 (0) | 8,372 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 1,992 (0) | 22,721 (0) | 0 | 0.00 | 657 (0) | 6,422 (0) |
| 2006 | 0 | 0.00 | 907 (0) | 7,193 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,295 (0) | 25,207 (0) | 0 | 0.00 | 724 (0) | 6,551 (0) |
| 2007 | 0 | 0.00 | 934 (0) | 7,302 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,245 (0) | 24,782 (0) | 0 | 0.00 | 755 (0) | 6,773 (0) |
| 2008 | 0 | 0.00 | 844 (0) | 5,811 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,392 (0) | 25,619 (0) | 0 | 0.00 | 763 (0) | 6,695 (0) |
| 2009 | 0 | 0.00 | 825 (0) | 5,603 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,428 (0) | 26,727 (0) | 0 | 0.00 | 813 (0) | 7,343 (0) |
| 2010 | 0 | 0.00 | 801 (0) | 5,316 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,385 (0) | 24,592 (0) | 0 | 0.00 | 756 (0) | 7,281 (0) |
| 2011 | 0 | 0.00 | 970 (0) | 7,101 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,530 (0) | 26,143 (0) | 0 | 0.00 | 786 (0) | 7,159 (0) |
| 2012 | 0 | 0.00 | 1,048 (0) | 8,231 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,685 (0) | 26,630 (0) | 0 | 0.00 | 843 (0) | 8,045 (0) |
| 2013 | 0 | 0.00 | 689 (0) | 3,725 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 2,357 (0) | 23,384 (0) | 0 | 0.00 | 637 (0) | 6,432 (0) |
| 2014 | 0 | 0.00 | 1,277 (0) | 6,924 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,347 (0) | 30,158 (0) | 0 | 0.00 | 758 (0) | 5,743 (0) |
| 2015 | 0 | 0.00 | 1,405 (0) | 7,527 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,490 (0) | 30,168 (0) | 0 | 0.00 | 729 (0) | 5,322 (0) |
| 2016 | 0 | 0.00 | 1,476 (0) | 7,130 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,635 (0) | 31,259 (0) | 0 | 0.00 | 1,014 (0) | 5,845 (0) |
| 2017 | 0 | 0.00 | 1,416 (0) | 7,266 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,328 (0) | 29,099 (0) | 0 | 0.00 | 864 (0) | 5,314 (0) |
| 2018 | 0 | 0.00 | 1,444 (0) | 7,803 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,209 (0) | 25,140 (0) | 0 | 0.00 | 873 (0) | 5,624 (0) |
| 2019 | 0 | 0.00 | 1,524 (0) | 7,652 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,246 (0) | 26,031 (0) | 0 | 0.00 | 870 (0) | 5,360 (0) |
| 2020 | 0 | 0.00 | 1,450 (0) | 7,356 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,356 (0) | 29,301 (0) | 0 | 0.00 | 887 (0) | 5,407 (0) |
| 2021 | 0 | 0.00 | 1,658 (0) | 9,838 (0) | 0 | 0.00 | 0 (0) | 0 (0) | 0 | 0.00 | 3,221 (0) | 22,414 (0) | 0 | 0.00 | 931 (0) | 6,946 (0) |

**Table 4.** Yellowedge Grouper 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 within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Yellowedge Grouper.

| | AB1 | | | | B2 | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Total | CV | PSU | Trp | Total | CV | PSU | Trp |
| 1981 | 0 | 0.00 | 621 (0) | 4,332 (0) | 0 | 0.00 | 621 (0) | 4,332 (0) |
| 1982 | 74,527 | 1.00 | 1,081 (1) | 8,097 (1) | 0 | 0.00 | 1,081 (0) | 8,097 (0) |
| 1983 | 0 | 0.00 | 1,242 (0) | 11,263 (0) | 0 | 0.00 | 1,242 (0) | 11,263 (0) |
| 1984 | 23 | 0.22 | 1,253 (1) | 10,162 (1) | 0 | 0.00 | 1,253 (0) | 10,162 (0) |
| 1985 | 0 | 0.00 | 1,495 (0) | 12,693 (0) | 0 | 0.00 | 1,495 (0) | 12,693 (0) |
| 1986 | 42 | 0.28 | 2,492 (1) | 19,012 (1) | 0 | 0.00 | 2,492 (0) | 19,012 (0) |
| 1987 | 0 | 0.00 | 2,415 (0) | 19,640 (0) | 0 | 0.00 | 2,415 (0) | 19,640 (0) |
| 1988 | 0 | 0.00 | 2,728 (0) | 20,885 (0) | 0 | 0.00 | 2,728 (0) | 20,885 (0) |
| 1989 | 3,348 | 1.00 | 2,031 (1) | 15,713 (1) | 0 | 0.00 | 2,031 (0) | 15,713 (0) |
| 1990 | 0 | 0.00 | 1,696 (0) | 12,315 (0) | 0 | 0.00 | 1,696 (0) | 12,315 (0) |
| 1991 | 0 | 0.00 | 1,868 (0) | 14,966 (0) | 12,768 | 1.00 | 1,868 (1) | 14,966 (1) |
| 1992 | 0 | 0.00 | 3,115 (0) | 28,765 (0) | 0 | 0.00 | 3,115 (0) | 28,765 (0) |
| 1993 | 1,451 | 1.00 | 2,661 (1) | 25,731 (1) | 0 | 0.00 | 2,661 (0) | 25,731 (0) |
| 1994 | 0 | 0.00 | 2,736 (0) | 30,052 (0) | 41 | 1.00 | 2,736 (1) | 30,052 (1) |
| 1995 | 0 | 0.00 | 2,429 (0) | 27,218 (0) | 0 | 0.00 | 2,429 (0) | 27,218 (0) |
| 1996 | 0 | 0.00 | 2,737 (0) | 27,195 (0) | 1,041 | 1.00 | 2,737 (1) | 27,195 (1) |
| 1997 | 307 | 1.00 | 2,765 (1) | 28,502 (1) | 1,516 | 1.00 | 2,765 (1) | 28,502 (1) |
| 1998 | 807 | 0.79 | 3,295 (3) | 34,021 (3) | 0 | 0.00 | 3,295 (0) | 34,021 (0) |
| 1999 | 405 | 0.56 | 4,247 (4) | 44,750 (4) | 1,016 | 1.00 | 4,247 (1) | 44,750 (1) |
| 2000 | 0 | 0.00 | 3,968 (0) | 41,085 (0) | 0 | 0.00 | 3,968 (0) | 41,085 (0) |
| 2001 | 150 | 0.54 | 3,634 (4) | 40,327 (4) | 0 | 0.00 | 3,634 (0) | 40,327 (0) |
| 2002 | 243 | 0.88 | 3,720 (2) | 42,055 (2) | 0 | 0.00 | 3,720 (0) | 42,055 (0) |
| 2003 | 18 | 1.00 | 4,127 (1) | 43,100 (1) | 0 | 0.00 | 4,127 (0) | 43,100 (0) |
| 2004 | 125 | 1.00 | 3,678 (1) | 41,610 (1) | 0 | 0.00 | 3,678 (0) | 41,610 (0) |
| 2005 | 11,369 | 0.94 | 3,316 (3) | 37,515 (3) | 0 | 0.00 | 3,316 (0) | 37,515 (0) |
| 2006 | 266 | 0.80 | 3,592 (2) | 38,951 (3) | 0 | 0.00 | 3,592 (0) | 38,951 (0) |
| 2007 | 34 | 1.00 | 3,614 (1) | 38,857 (1) | 0 | 0.00 | 3,614 (0) | 38,857 (0) |
| 2008 | 42 | 1.00 | 3,690 (1) | 38,125 (1) | 0 | 0.00 | 3,690 (0) | 38,125 (0) |
| 2009 | 281 | 0.71 | 3,766 (3) | 39,673 (3) | 0 | 0.00 | 3,766 (0) | 39,673 (0) |
| 2010 | 0 | 0.00 | 3,632 (0) | 37,189 (0) | 0 | 0.00 | 3,632 (0) | 37,189 (0) |

| | AB1 | | | | B2 | | | |
|---|---|---|---|---|---|---|---|---|
| **Year** | **Total** | **CV** | **PSU** | **Trp** | **Total** | **CV** | **PSU** | **Trp** |
| 2011 | 1,033 | 1.00 | 3,951 (1) | 40,403 (1) | 0 | 0.00 | 3,951 (0) | 40,403 (0) |
| 2012 | 97 | 1.00 | 4,231 (1) | 42,906 (1) | 0 | 0.00 | 4,231 (0) | 42,906 (0) |
| 2013 | 548 | 0.70 | 3,369 (3) | 33,541 (3) | 0 | 0.00 | 3,369 (0) | 33,541 (0) |
| 2014 | 1,658 | 0.33 | 4,450 (11) | 42,825 (12) | 0 | 0.00 | 4,450 (0) | 42,825 (0) |
| 2015 | 1,364 | 0.42 | 4,702 (10) | 43,017 (10) | 0 | 0.00 | 4,702 (0) | 43,017 (0) |
| 2016 | 358 | 0.43 | 5,184 (10) | 44,234 (10) | 0 | 0.00 | 5,184 (0) | 44,234 (0) |
| 2017 | 91 | 0.77 | 4,653 (2) | 41,679 (2) | 0 | 0.00 | 4,653 (0) | 41,679 (0) |
| 2018 | 4,031 | 0.83 | 4,541 (14) | 38,567 (14) | 0 | 0.00 | 4,541 (0) | 38,567 (0) |
| 2019 | 6,961 | 0.42 | 4,615 (16) | 39,043 (20) | 0 | 0.00 | 4,615 (0) | 39,043 (0) |
| 2020 | 3,697 | 0.45 | 4,759 (16) | 42,064 (18) | 0 | 0.00 | 4,759 (0) | 42,064 (0) |
| 2021 | 1,754 | 0.43 | 4,852 (7) | 39,198 (8) | 0 | 0.00 | 4,852 (0) | 39,198 (0) |

**Table 5.** Yellowedge Grouper 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).

| | Cbt | | Priv | | Total | |
|---|---|---|---|---|---|---|
| Year | LBS | CV | LBS | CV | LBS | CV |
| 1981 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1982 | 0 | 0.00 | 691,570 | 1.00 | 691,570 | 1.00 |
| 1983 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1984 | 0 | 0.00 | 213 | 0.22 | 213 | 0.22 |
| 1985 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1986 | 0 | 0.00 | 390 | 0.28 | 390 | 0.28 |
| 1987 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1988 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1989 | 0 | 0.00 | 31,066 | 1.00 | 31,066 | 1.00 |
| 1990 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1991 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1992 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1993 | 13,461 | 1.00 | 0 | 0.00 | 13,461 | 1.00 |
| 1994 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1995 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1996 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 1997 | 2,851 | 1.00 | 0 | 0.00 | 2,851 | 1.00 |
| 1998 | 7,486 | 0.81 | 0 | 0.00 | 7,486 | 0.81 |
| 1999 | 3,756 | 0.59 | 0 | 0.00 | 3,756 | 0.58 |
| 2000 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 2001 | 1,396 | 0.56 | 0 | 0.00 | 1,396 | 0.56 |
| 2002 | 2,252 | 0.89 | 0 | 0.00 | 2,252 | 0.89 |
| 2003 | 167 | 1.00 | 0 | 0.00 | 167 | 1.00 |
| 2004 | 1,155 | 1.00 | 0 | 0.00 | 1,155 | 1.00 |
| 2005 | 7,000 | 0.92 | 100,822 | 1.00 | 107,822 | 0.94 |
| 2006 | 2,473 | 0.83 | 0 | 0.00 | 2,473 | 0.83 |
| 2007 | 314 | 1.00 | 0 | 0.00 | 314 | 1.00 |
| 2008 | 393 | 1.00 | 0 | 0.00 | 393 | 1.00 |
| 2009 | 865 | 0.77 | 1,740 | 1.00 | 2,605 | 0.73 |
| 2010 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 2011 | 9,582 | 1.00 | 0 | 0.00 | 9,582 | 1.00 |
| 2012 | 902 | 1.00 | 0 | 0.00 | 902 | 1.00 |
| 2013 | 2,075 | 0.92 | 3,008 | 1.00 | 5,083 | 0.75 |

| | Cbt | | Priv | | Total | |
|---|---|---|---|---|---|---|
| Year | LBS | CV | LBS | CV | LBS | CV |
| 2014 | 3,526 | 0.66 | 11,859 | 0.00 | 15,385 | 0.36 |
| 2015 | 770 | 0.76 | 11,884 | 0.54 | 12,654 | 0.53 |
| 2016 | 2,243 | 0.62 | 1,076 | 0.00 | 3,320 | 0.43 |
| 2017 | 696 | 0.92 | 148 | 0.00 | 844 | 0.77 |
| 2018 | 2,635 | 0.64 | 34,768 | 0.94 | 37,404 | 0.91 |
| 2019 | 37,503 | 0.50 | 25,046 | 0.93 | 62,549 | 0.43 |
| 2020 | 10,432 | 0.78 | 23,873 | 0.59 | 34,305 | 0.51 |
| 2021 | 1,490 | 1.00 | 14,782 | 0.00 | 16,272 | 0.61 |

**Table 6.** Summary of length measurements (millimeters fork length) from MRIP-intercepted Yellowedge Grouper by mode and year. Summaries include the number of fish measured by MRIP and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.

| | Cbt | | | | | Priv | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 1981 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1982 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1983 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1984 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1985 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1986 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1987 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1988 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1989 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1990 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1991 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1992 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1993 | 1 (1) | 259 | 259 | 0 | 259 | 0 (0) | 0 | 0 | 0 | 0 |
| 1994 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1995 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1996 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1997 | 2 (1) | 549 | 644 | 135 | 740 | 0 (0) | 0 | 0 | 0 | 0 |
| 1998 | 4 (2) | 549 | 771 | 167 | 940 | 0 (0) | 0 | 0 | 0 | 0 |
| 1999 | 5 (4) | 498 | 577 | 81 | 663 | 0 (0) | 0 | 0 | 0 | 0 |
| 2000 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2001 | 6 (4) | 496 | 574 | 100 | 775 | 0 (0) | 0 | 0 | 0 | 0 |
| 2002 | 6 (2) | 433 | 592 | 121 | 775 | 0 (0) | 0 | 0 | 0 | 0 |
| 2003 | 1 (1) | 690 | 690 | 0 | 690 | 0 (0) | 0 | 0 | 0 | 0 |
| 2004 | 7 (1) | 558 | 674 | 84 | 747 | 0 (0) | 0 | 0 | 0 | 0 |
| 2005 | 12 (2) | 489 | 632 | 94 | 755 | 5 (1) | 489 | 680 | 169 | 925 |
| 2006 | 5 (3) | 405 | 664 | 218 | 890 | 0 (0) | 0 | 0 | 0 | 0 |
| 2007 | 1 (1) | 637 | 637 | 0 | 637 | 0 (0) | 0 | 0 | 0 | 0 |
| 2008 | 1 (1) | 587 | 587 | 0 | 587 | 0 (0) | 0 | 0 | 0 | 0 |
| 2009 | 2 (2) | 452 | 520 | 95 | 587 | 1 (1) | 587 | 587 | 0 | 587 |
| 2010 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2011 | 6 (1) | 674 | 716 | 44 | 792 | 0 (0) | 0 | 0 | 0 | 0 |

| | Cbt | | | | | Priv | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 2012 | 3 (1) | 724 | 774 | 44 | 805 | 0 (0) | 0 | 0 | 0 | 0 |
| 2013 | 3 (2) | 576 | 669 | 144 | 835 | 1 (1) | 540 | 540 | 0 | 540 |
| 2014 | 3 (2) | 495 | 544 | 51 | 597 | 0 (0) | 0 | 0 | 0 | 0 |
| 2015 | 0 (0) | 0 | 0 | 0 | 0 | 1 (1) | 600 | 600 | 0 | 600 |
| 2016 | 1 (1) | 585 | 585 | 0 | 585 | 0 (0) | 0 | 0 | 0 | 0 |
| 2017 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2018 | 0 (0) | 0 | 0 | 0 | 0 | 3 (1) | 365 | 653 | 317 | 993 |
| 2019 | 11 (5) | 588 | 691 | 62 | 783 | 2 (1) | 360 | 560 | 284 | 761 |
| 2020 | 4 (2) | 588 | 721 | 144 | 905 | 3 (2) | 525 | 586 | 53 | 622 |
| 2021 | 4 (1) | 525 | 645 | 179 | 905 | 0 (0) | 0 | 0 | 0 | 0 |

**Table 7.** Summary of weight measurements (pounds whole weight) from MRIP-intercepted Yellowedge Grouper 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.

| | Cbt | | | | | Priv | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 1981 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1982 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1983 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1984 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1985 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1986 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1987 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1988 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1989 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1990 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1991 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1992 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1993 | 1 (1) | 0.6 | 0.6 | 0.0 | 0.6 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1994 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1995 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1996 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1997 | 2 (1) | 14.2 | 21.6 | 10.4 | 29.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1998 | 4 (2) | 7.2 | 20.4 | 12.2 | 33.1 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1999 | 5 (4) | 4.7 | 7.8 | 3.0 | 10.9 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2001 | 6 (4) | 5.2 | 9.0 | 3.7 | 15.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2002 | 6 (2) | 2.7 | 7.8 | 4.5 | 15.4 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2003 | 1 (1) | 10.8 | 10.8 | 0.0 | 10.8 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2004 | 7 (1) | 5.5 | 9.9 | 3.4 | 13.3 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2005 | 12 (2) | 4.0 | 8.8 | 3.9 | 15.4 | 5 (1) | 4.0 | 11.9 | 8.9 | 26.4 |
| 2006 | 5 (3) | 2.0 | 12.1 | 10.3 | 25.4 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2007 | 1 (1) | 8.4 | 8.4 | 0.0 | 8.4 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 1 (1) | 6.1 | 6.1 | 0.0 | 6.1 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 2 (2) | 2.8 | 4.4 | 2.3 | 6.1 | 1 (1) | 6.1 | 6.1 | 0.0 | 6.1 |
| 2010 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2011 | 6 (1) | 9.4 | 11.9 | 2.8 | 17.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |

| | Cbt | | | | | Priv | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 2012 | 3 (1) | 12.2 | 15.3 | 2.7 | 17.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2013 | 3 (2) | 6.1 | 10.6 | 7.5 | 19.3 | 1 (1) | 5.1 | 5.1 | 0.0 | 5.1 |
| 2014 | 3 (2) | 3.6 | 4.9 | 1.2 | 6.1 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2015 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 1 (1) | 7.7 | 7.7 | 0.0 | 7.7 |
| 2016 | 1 (1) | 6.3 | 6.3 | 0.0 | 6.3 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2017 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2018 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 | 3 (1) | 1.5 | 13.2 | 15.3 | 30.6 |
| 2019 | 11 (5) | 5.9 | 9.5 | 2.3 | 13.7 | 2 (1) | 1.5 | 6.8 | 7.6 | 12.2 |
| 2020 | 4 (2) | 5.9 | 12.6 | 7.7 | 23.0 | 3 (2) | 4.0 | 5.8 | 1.6 | 7.0 |
| 2021 | 4 (1) | 4.0 | 9.5 | 9.1 | 23.0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |

**Table 8.** Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Yellowedge Grouper 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.

| | Length | | | | | Weight | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 1981 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1982 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1983 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1984 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1985 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1986 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1987 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1988 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1989 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1990 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1991 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1992 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1993 | 1 (1) | 259 | 259 | 0 | 259 | 1 (1) | 0.6 | 0.6 | 0.0 | 0.6 |
| 1994 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1995 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1996 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 1997 | 2 (1) | 549 | 644 | 135 | 740 | 2 (1) | 14.2 | 21.6 | 10.4 | 29.0 |
| 1998 | 4 (2) | 549 | 771 | 167 | 940 | 4 (2) | 7.2 | 20.4 | 12.2 | 33.1 |
| 1999 | 5 (4) | 498 | 577 | 81 | 663 | 5 (4) | 4.7 | 7.8 | 3.0 | 10.9 |
| 2000 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2001 | 6 (4) | 496 | 574 | 100 | 775 | 6 (4) | 5.2 | 9.0 | 3.7 | 15.0 |
| 2002 | 6 (2) | 433 | 592 | 121 | 775 | 6 (2) | 2.7 | 7.8 | 4.5 | 15.4 |
| 2003 | 1 (1) | 690 | 690 | 0 | 690 | 1 (1) | 10.8 | 10.8 | 0.0 | 10.8 |
| 2004 | 7 (1) | 558 | 674 | 84 | 747 | 7 (1) | 5.5 | 9.9 | 3.4 | 13.3 |
| 2005 | 17 (3) | 489 | 647 | 117 | 925 | 17 (3) | 4.0 | 9.7 | 5.7 | 26.4 |
| 2006 | 5 (3) | 405 | 664 | 218 | 890 | 5 (3) | 2.0 | 12.1 | 10.3 | 25.4 |
| 2007 | 1 (1) | 637 | 637 | 0 | 637 | 1 (1) | 8.4 | 8.4 | 0.0 | 8.4 |
| 2008 | 1 (1) | 587 | 587 | 0 | 587 | 1 (1) | 6.1 | 6.1 | 0.0 | 6.1 |
| 2009 | 3 (3) | 452 | 542 | 78 | 587 | 3 (3) | 2.8 | 5.0 | 1.9 | 6.1 |
| 2010 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |

| | Length | | | | | Weight | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 2011 | 6 (1) | 674 | 716 | 44 | 792 | 6 (1) | 9.4 | 11.9 | 2.8 | 17.0 |
| 2012 | 3 (1) | 724 | 774 | 44 | 805 | 3 (1) | 12.2 | 15.3 | 2.7 | 17.0 |
| 2013 | 4 (3) | 540 | 637 | 134 | 835 | 4 (3) | 5.1 | 9.2 | 6.7 | 19.3 |
| 2014 | 3 (2) | 495 | 544 | 51 | 597 | 3 (2) | 3.6 | 4.9 | 1.2 | 6.1 |
| 2015 | 1 (1) | 600 | 600 | 0 | 600 | 1 (1) | 7.7 | 7.7 | 0.0 | 7.7 |
| 2016 | 1 (1) | 585 | 585 | 0 | 585 | 1 (1) | 6.3 | 6.3 | 0.0 | 6.3 |
| 2017 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0.0 | 0.0 | 0.0 | 0.0 |
| 2018 | 3 (1) | 365 | 653 | 317 | 993 | 3 (1) | 1.5 | 13.2 | 15.3 | 30.6 |
| 2019 | 13 (6) | 360 | 671 | 111 | 783 | 13 (6) | 1.5 | 9.1 | 3.2 | 13.7 |
| 2020 | 7 (4) | 525 | 663 | 129 | 905 | 7 (4) | 4.0 | 9.7 | 6.6 | 23.0 |
| 2021 | 4 (1) | 525 | 645 | 179 | 905 | 4 (1) | 4.0 | 9.5 | 9.1 | 23.0 |

**Table 9.** Summary of length measurements (millimeters total length) from TPWD-intercepted Yellowedge Grouper by mode and year. Summaries include the number of fish measured by TPWD and, in parentheses, the number of angler trips from which those fish were measured (N), and the minimum (Min), arithmetic mean (Avg), standard deviation (SD), and maximum (Max) size of fish lengths.

| | Priv | | | | | Total | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 1983 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1984 | 1 (1) | 360 | 360 | 0 | 360 | 1 (1) | 360 | 360 | 0 | 360 |
| 1985 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1986 | 1 (1) | 280 | 280 | 0 | 280 | 1 (1) | 280 | 280 | 0 | 280 |
| 1987 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1988 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1989 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1990 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1991 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1992 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1993 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1994 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1995 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1996 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1997 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1998 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 1999 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2000 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2001 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2002 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2003 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2004 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2005 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2006 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2007 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2008 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2009 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2010 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2011 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2012 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2013 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |

| | Priv | | | | | Total | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | Min | Avg | SD | Max | N | Min | Avg | SD | Max |
| 2014 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2015 | 1 (1) | 483 | 483 | 0 | 483 | 1 (1) | 483 | 483 | 0 | 483 |
| 2016 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2017 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2018 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2019 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2020 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |
| 2021 | 0 (0) | 0 | 0 | 0 | 0 | 0 (0) | 0 | 0 | 0 | 0 |

**Table 10.** Estimated average weights of landed Yellowedge Grouper 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 (Table 5) divided by estimates of landings-in-number (Table 1). 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 |
| 1982 | | | | | | | | | |
| 1984 | | | | 9.28 | 0.00 | 1 (1) | 9.28 | 0.00 | 1 (1) |
| 1986 | | | | 9.28 | 0.00 | 1 (1) | 9.28 | 0.00 | 1 (1) |
| 1989 | | | | | | | | | |
| 1991 | | | | | | | | | |
| 1993 | 9.28 | 0.00 | 1 (1) | | | | 9.28 | 0.00 | 1 (1) |
| 1994 | | | | | | | | | |
| 1996 | | | | | | | | | |
| 1997 | 9.28 | 0.34 | 1 (2) | | | | 9.28 | 0.34 | 1 (2) |
| 1998 | 9.28 | 0.30 | 2 (4) | | | | 9.28 | 0.30 | 2 (4) |
| 1999 | 9.28 | 0.17 | 4 (5) | | | | 9.28 | 0.17 | 4 (5) |
| 2001 | 9.28 | 0.17 | 4 (6) | | | | 9.28 | 0.17 | 4 (6) |
| 2002 | 9.28 | 0.23 | 2 (6) | | | | 9.28 | 0.23 | 2 (6) |
| 2003 | 9.28 | 0.00 | 1 (1) | | | | 9.28 | 0.00 | 1 (1) |
| 2004 | 9.28 | 0.13 | 1 (7) | | | | 9.28 | 0.13 | 1 (7) |
| 2005 | 9.48 | 0.13 | 2 (12) | 9.48 | 0.33 | 1 (5) | 9.48 | 0.14 | 3 (17) |
| 2006 | 9.28 | 0.38 | 3 (5) | | | | 9.28 | 0.38 | 3 (5) |
| 2007 | 9.28 | 0.00 | 1 (1) | | | | 9.28 | 0.00 | 1 (1) |
| 2008 | 9.28 | 0.00 | 1 (1) | | | | 9.28 | 0.00 | 1 (1) |
| 2009 | 9.28 | 0.38 | 2 (2) | 9.28 | 0.00 | 1 (1) | 9.28 | 0.22 | 3 (3) |
| 2011 | 9.28 | 0.10 | 1 (6) | | | | 9.28 | 0.10 | 1 (6) |
| 2012 | 9.28 | 0.10 | 1 (3) | | | | 9.28 | 0.10 | 1 (3) |
| 2013 | 9.28 | 0.41 | 2 (3) | 9.28 | 0.00 | 1 (1) | 9.28 | 0.37 | 3 (4) |
| 2014 | 9.28 | 0.14 | 2 (3) | | | | 9.28 | 0.14 | 2 (3) |
| 2015 | | | | 9.28 | 0.35 | 2 (2) | 9.28 | 0.35 | 2 (2) |
| 2016 | 9.28 | 0.00 | 1 (1) | | | | 9.28 | 0.00 | 1 (1) |
| 2017 | | | | | | | | | |
| 2018 | | | | 9.28 | 0.67 | 1 (3) | 9.28 | 0.67 | 1 (3) |
| 2019 | 9.09 | 0.07 | 5 (11) | 8.83 | 0.78 | 1 (2) | 8.99 | 0.10 | 6 (13) |
| 2020 | 9.28 | 0.30 | 2 (4) | 9.28 | 0.16 | 2 (3) | 9.28 | 0.26 | 4 (7) |
| 2021 | 9.28 | 0.48 | 1 (4) | | | | 9.28 | 0.48 | 1 (4) |

**Table 11.** Resolution of landings-in-weight estimates (pounds whole weight) for Gulf of Mexico Yellowedge Grouper by year and hierarchy level (MRIP, LACreel 2014+, TPWD), defined by **s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, **w**ave, and **a**rea. Average weight estimates are calculated at the finest strata meeting a minimum sample size threshold (Dettloff and Matter 2019b). Larger sample sizes therefore allow average weights to be calculated at finer stratifications, the finest being at the srysmwa level (Matter and Rios 2013). Annual summaries include the number of fish and angler trips (in parentheses) from which weight information was collected (N) and the landings-in-weight estimates (AB1.lbs) by hierarchy level. As an example, (srys) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular **s**pecies, **r**egion, **y**ear, and **s**tate (i.e., weight observations collapsed across modes, waves, and areas).

| | | AB1.lbs | | |
|---|---|---|---|---|
| Year | N | sr | sry | srys |
| 1982 | 0 (0) | 691,570 | 0 | 0 |
| 1984 | 1 (1) | 213 | 0 | 0 |
| 1986 | 1 (1) | 390 | 0 | 0 |
| 1989 | 0 (0) | 31,066 | 0 | 0 |
| 1993 | 1 (1) | 13,461 | 0 | 0 |
| 1997 | 2 (1) | 2,851 | 0 | 0 |
| 1998 | 4 (2) | 7,486 | 0 | 0 |
| 1999 | 5 (4) | 3,756 | 0 | 0 |
| 2001 | 6 (4) | 1,396 | 0 | 0 |
| 2002 | 6 (2) | 2,252 | 0 | 0 |
| 2003 | 1 (1) | 167 | 0 | 0 |
| 2004 | 7 (1) | 1,155 | 0 | 0 |
| 2005 | 17 (3) | 0 | 107,822 | 0 |
| 2006 | 5 (3) | 2,473 | 0 | 0 |
| 2007 | 1 (1) | 314 | 0 | 0 |
| 2008 | 1 (1) | 393 | 0 | 0 |
| 2009 | 3 (3) | 2,605 | 0 | 0 |
| 2011 | 6 (1) | 9,582 | 0 | 0 |
| 2012 | 3 (1) | 902 | 0 | 0 |
| 2013 | 4 (3) | 5,083 | 0 | 0 |
| 2014 | 3 (2) | 15,385 | 0 | 0 |
| 2015 | 2 (2) | 12,654 | 0 | 0 |
| 2016 | 1 (1) | 3,320 | 0 | 0 |
| 2017 | 0 (0) | 844 | 0 | 0 |
| 2018 | 3 (1) | 37,404 | 0 | 0 |
| 2019 | 13 (6) | 0 | 26,504 | 36,045 |
| 2020 | 7 (4) | 34,305 | 0 | 0 |
| 2021 | 4 (1) | 16,272 | 0 | 0 |

**Table 12.** Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by mode and year (MRIP, LACreel 2014+, TPWD). These effort estimates depict all (general) recreational fishing activity in the Gulf of Mexico and are not specific to Yellowedge Grouper. Effort from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.

| Year | Cbt | Hbt | Priv | Shore | Total |
|---|---|---|---|---|---|
| 1981 | 393,653 | 184,590 | 9,788,741 | 11,993,998 | 22,360,982 |
| 1982 | 523,703 | 260,912 | 11,539,636 | 16,031,708 | 28,355,959 |
| 1983 | 576,935 | 256,493 | 14,315,727 | 19,082,184 | 34,231,339 |
| 1984 | 538,563 | 242,211 | 13,987,249 | 19,033,336 | 33,801,359 |
| 1985 | 590,410 | 277,516 | 15,080,763 | 20,512,717 | 36,461,406 |
| 1986 | 566,657 | 0 | 14,587,739 | 17,564,400 | 32,718,796 |
| 1987 | 583,981 | 0 | 14,564,357 | 15,581,648 | 30,729,986 |
| 1988 | 513,682 | 0 | 17,004,167 | 19,708,841 | 37,226,690 |
| 1989 | 595,914 | 0 | 16,469,775 | 20,797,624 | 37,863,313 |
| 1990 | 582,368 | 0 | 17,519,384 | 18,977,872 | 37,079,624 |
| 1991 | 537,518 | 0 | 17,201,949 | 21,376,993 | 39,116,460 |
| 1992 | 562,458 | 0 | 17,780,312 | 19,122,372 | 37,465,142 |
| 1993 | 631,551 | 0 | 18,207,749 | 22,525,138 | 41,364,438 |
| 1994 | 673,526 | 0 | 18,672,590 | 22,752,231 | 42,098,347 |
| 1995 | 767,210 | 0 | 19,318,427 | 19,235,538 | 39,321,175 |
| 1996 | 726,006 | 0 | 19,318,537 | 17,892,546 | 37,937,089 |
| 1997 | 769,710 | 0 | 20,686,482 | 18,923,384 | 40,379,576 |
| 1998 | 765,060 | 0 | 22,196,180 | 20,982,599 | 43,943,839 |
| 1999 | 779,206 | 0 | 24,444,359 | 25,166,742 | 50,390,307 |
| 2000 | 760,488 | 0 | 24,024,272 | 29,061,230 | 53,845,990 |
| 2001 | 763,788 | 0 | 26,548,022 | 28,722,278 | 56,034,088 |
| 2002 | 742,415 | 0 | 25,802,816 | 26,490,849 | 53,036,080 |
| 2003 | 699,720 | 0 | 26,622,242 | 28,852,654 | 56,174,616 |
| 2004 | 780,766 | 0 | 29,916,938 | 31,220,797 | 61,918,501 |
| 2005 | 685,755 | 0 | 28,949,771 | 26,952,605 | 56,588,131 |
| 2006 | 817,416 | 0 | 26,857,005 | 25,733,034 | 53,407,455 |
| 2007 | 861,722 | 0 | 27,279,696 | 27,845,117 | 55,986,535 |
| 2008 | 810,000 | 0 | 29,549,560 | 25,979,743 | 56,339,303 |
| 2009 | 774,246 | 0 | 28,837,705 | 25,777,146 | 55,389,097 |
| 2010 | 595,284 | 0 | 29,906,126 | 28,969,138 | 59,470,548 |
| 2011 | 756,691 | 0 | 30,317,609 | 29,318,268 | 60,392,568 |

| Year | Cbt | Hbt | Priv | Shore | Total |
|---|---|---|---|---|---|
| 2012 | 939,221 | 0 | 31,617,139 | 31,553,451 | 64,109,811 |
| 2013 | 874,771 | 0 | 29,556,226 | 34,921,964 | 65,352,961 |
| 2014 | 861,546 | 0 | 23,156,536 | 25,039,160 | 49,057,242 |
| 2015 | 991,258 | 0 | 21,963,379 | 24,259,475 | 47,214,112 |
| 2016 | 1,054,084 | 0 | 23,314,398 | 27,212,850 | 51,581,332 |
| 2017 | 1,086,377 | 0 | 24,202,249 | 30,723,796 | 56,012,422 |
| 2018 | 1,221,177 | 0 | 22,537,087 | 29,097,279 | 52,855,543 |
| 2019 | 1,293,471 | 0 | 19,969,876 | 26,237,079 | 47,500,426 |
| 2020 | 1,181,632 | 0 | 22,705,487 | 29,528,408 | 53,415,527 |
| 2021 | 1,348,910 | 0 | 20,881,868 | 26,742,195 | 48,972,973 |

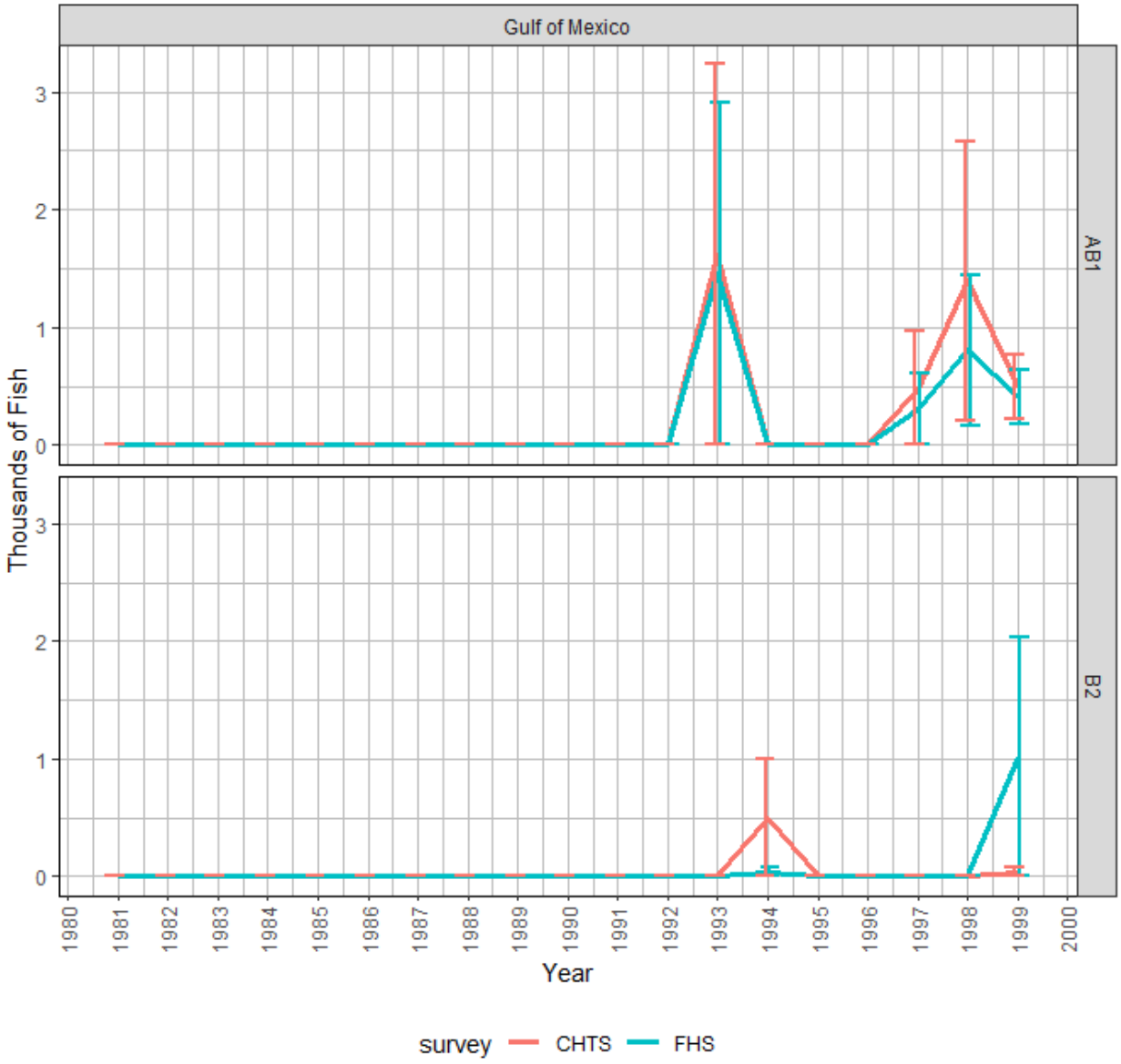


***Figure 1.*** *Comparison of Charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Yellowedge Grouper from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Gulf of Mexico between 1981 and 1999 (MRIP). The Charterboat calibration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

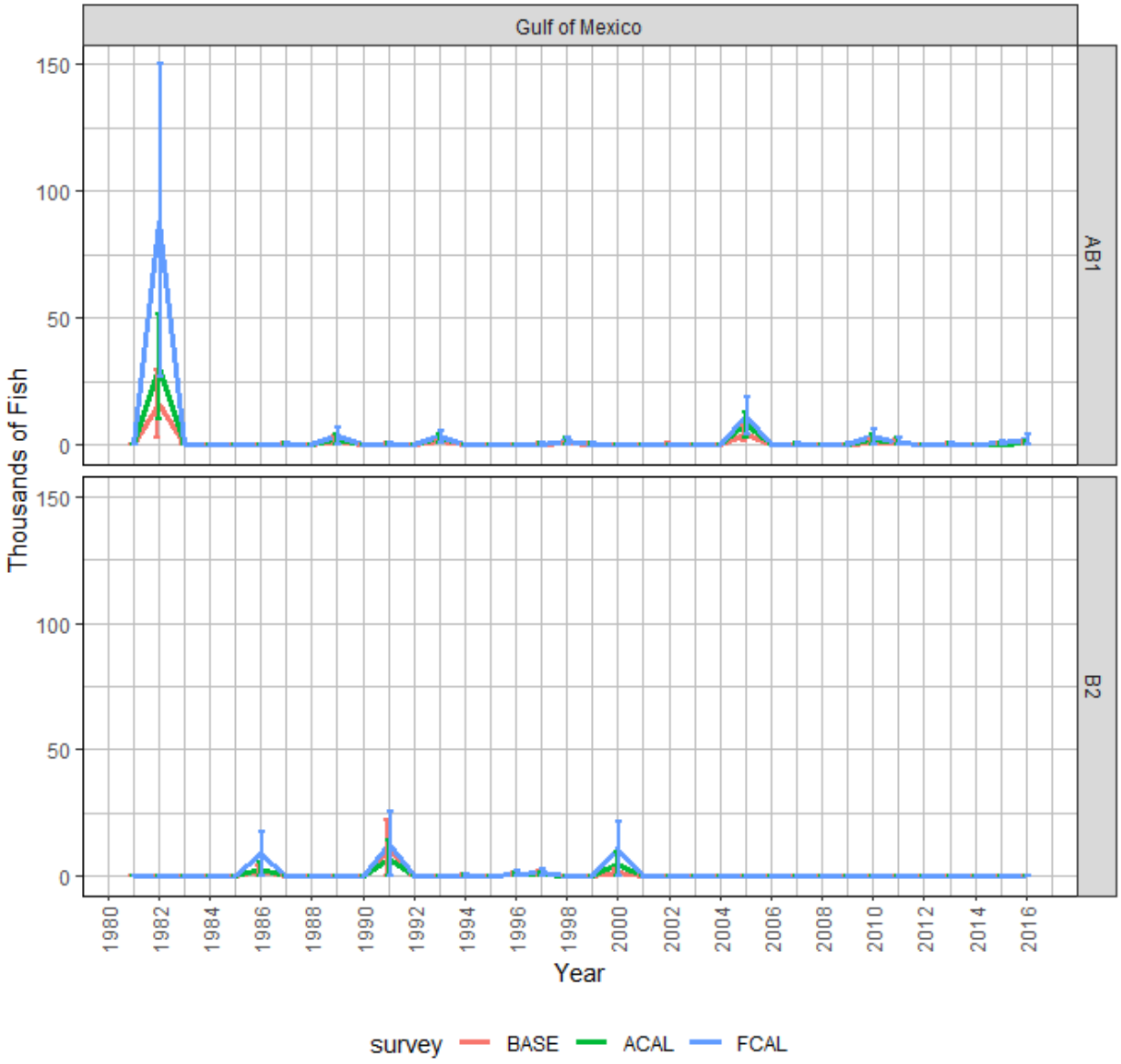


***Figure 2.*** *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Yellowedge Grouper in the Gulf of Mexico between 1981 and 2017. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include the Florida Keys as that domain is not separable from those used by the MRIP online comparison tool for the Gulf of Mexico (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.*

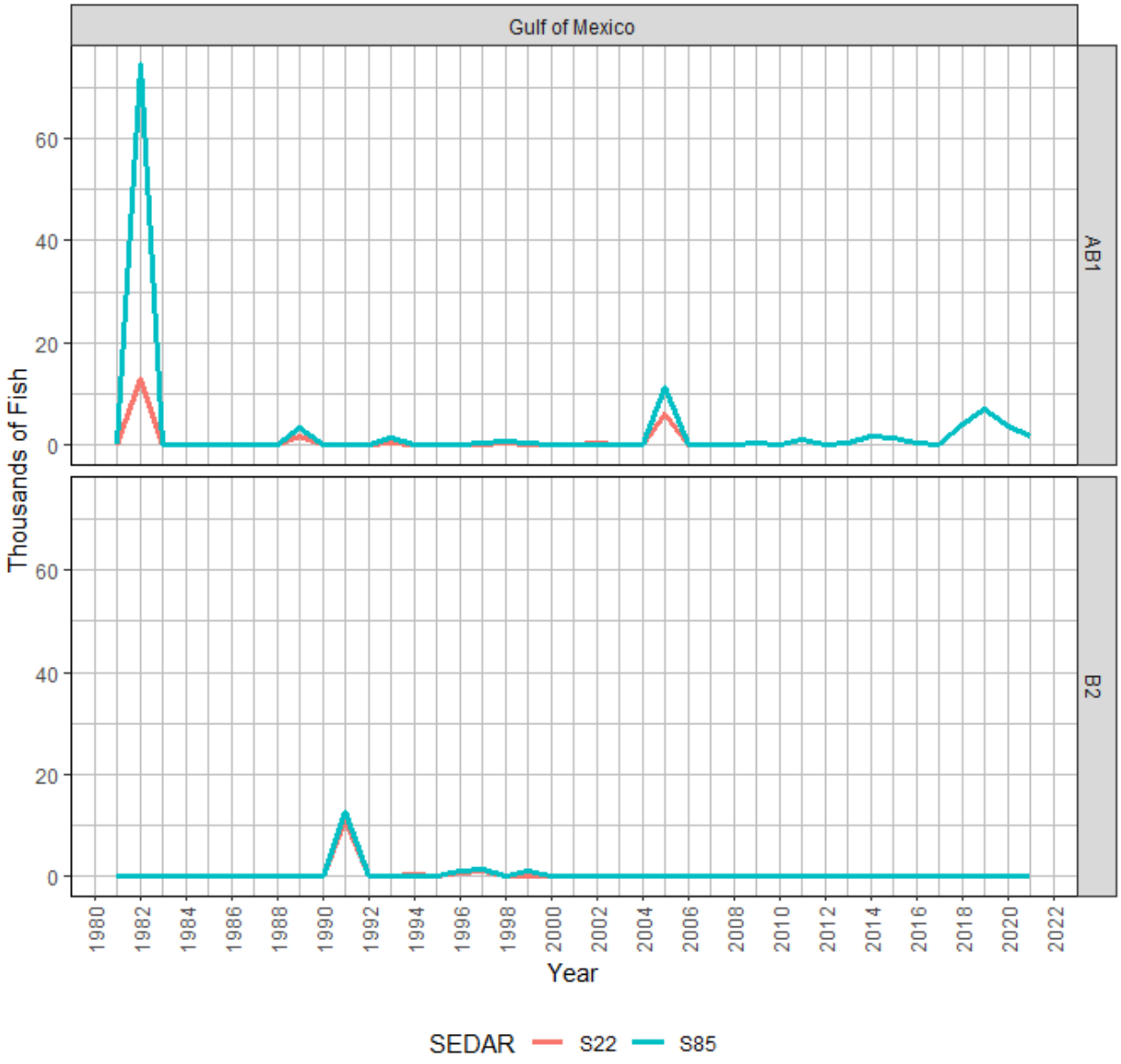


***Figure 3.*** *Comparison of total general recreational landings (AB1) and discard estimates (B2) for Gulf of Mexico Yellowedge Grouper between SEDAR 85 and SEDAR 22, the terminal years of which are 2021 and 2009 respectively. Differences in catch estimates, which are in thousands of fish, are largely a function of changes in the MRIP survey (e.g., redesigned APAIS in 2013, FES in 2018).*

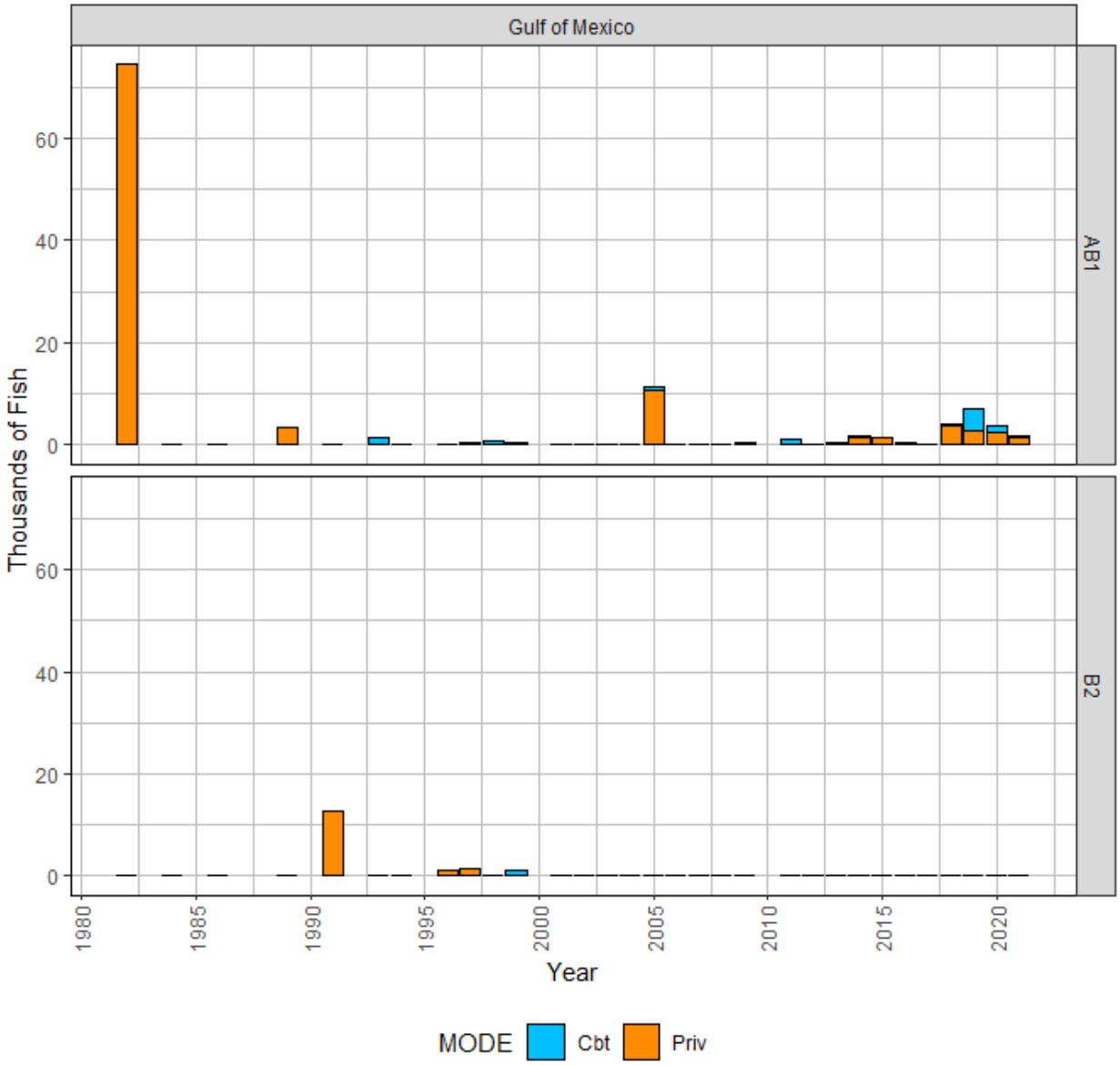


***Figure 4a.*** *Annual Yellowedge Grouper landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2021 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode.*

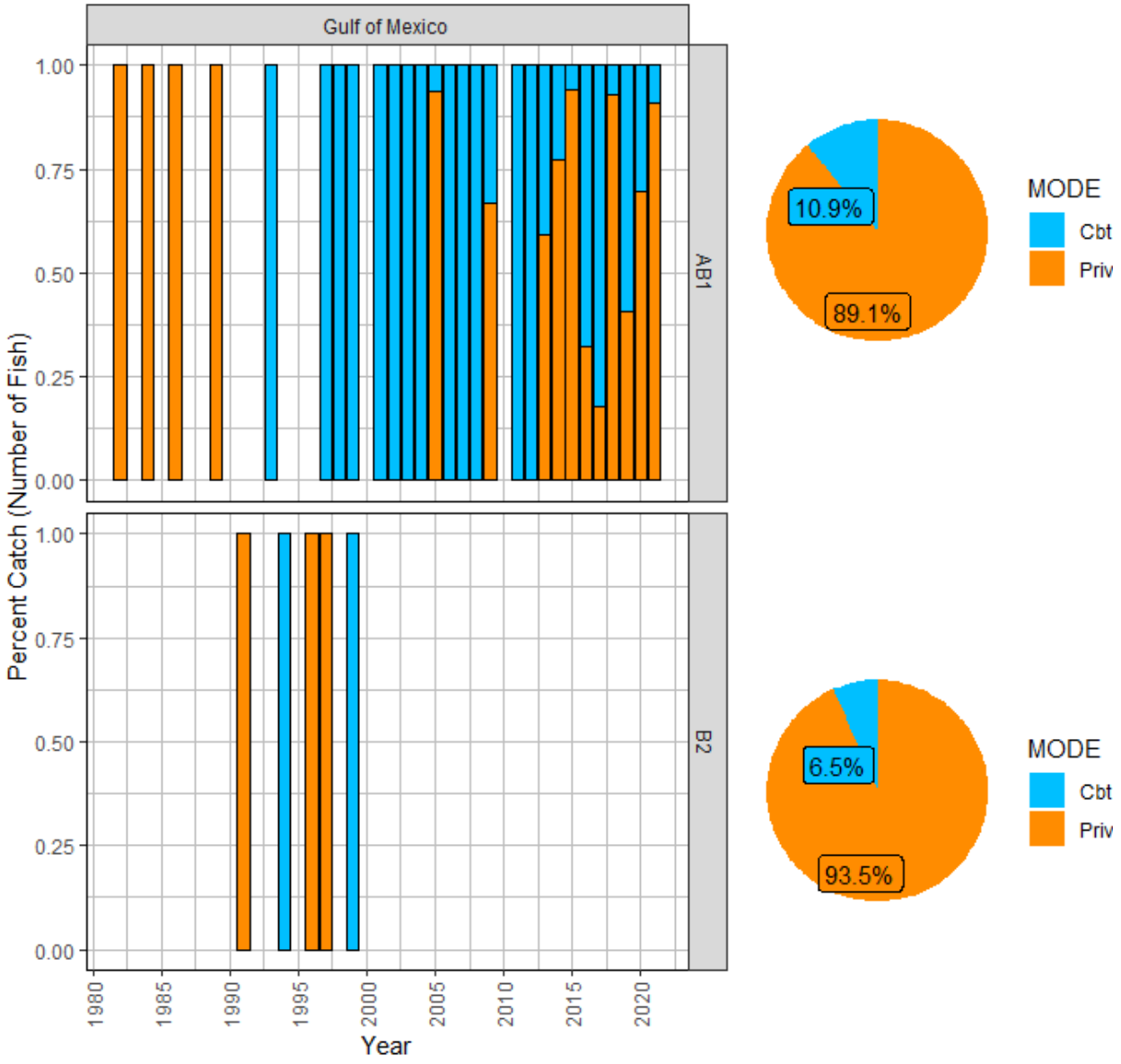


***Figure 4b.*** *Percent of Yellowedge Grouper landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph, shown as a proportion) and overall (pie chart) between 1981 and 2021 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined Private-Shore fishing mode in the LA Creel survey has been added to the Private mode.*

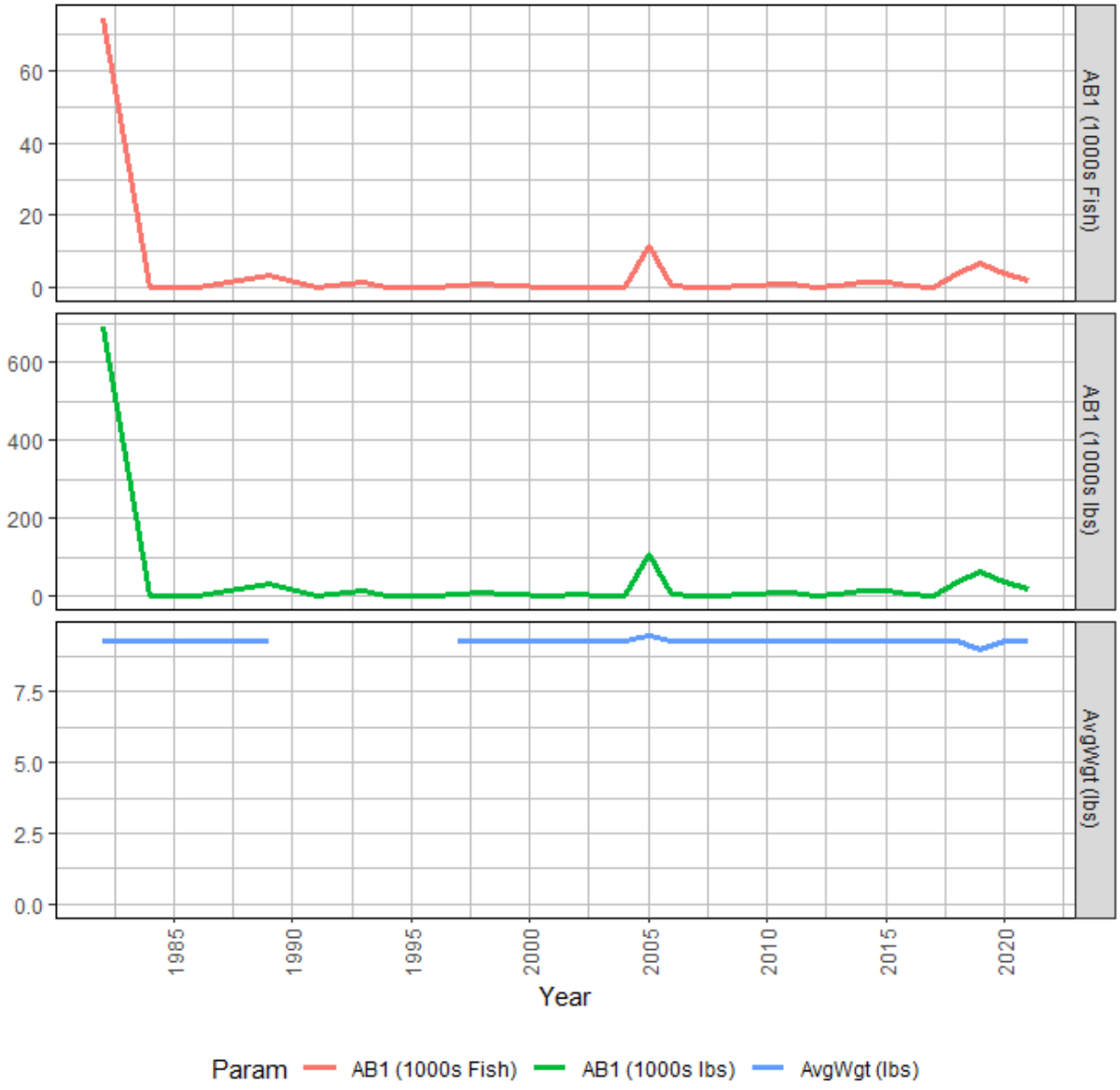


***Figure 5.*** *Estimates of annual landings for Yellowedge Grouper in the Gulf of Mexico (MRIP, LACreel 2014+, TPWD): estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates are calculated 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).*

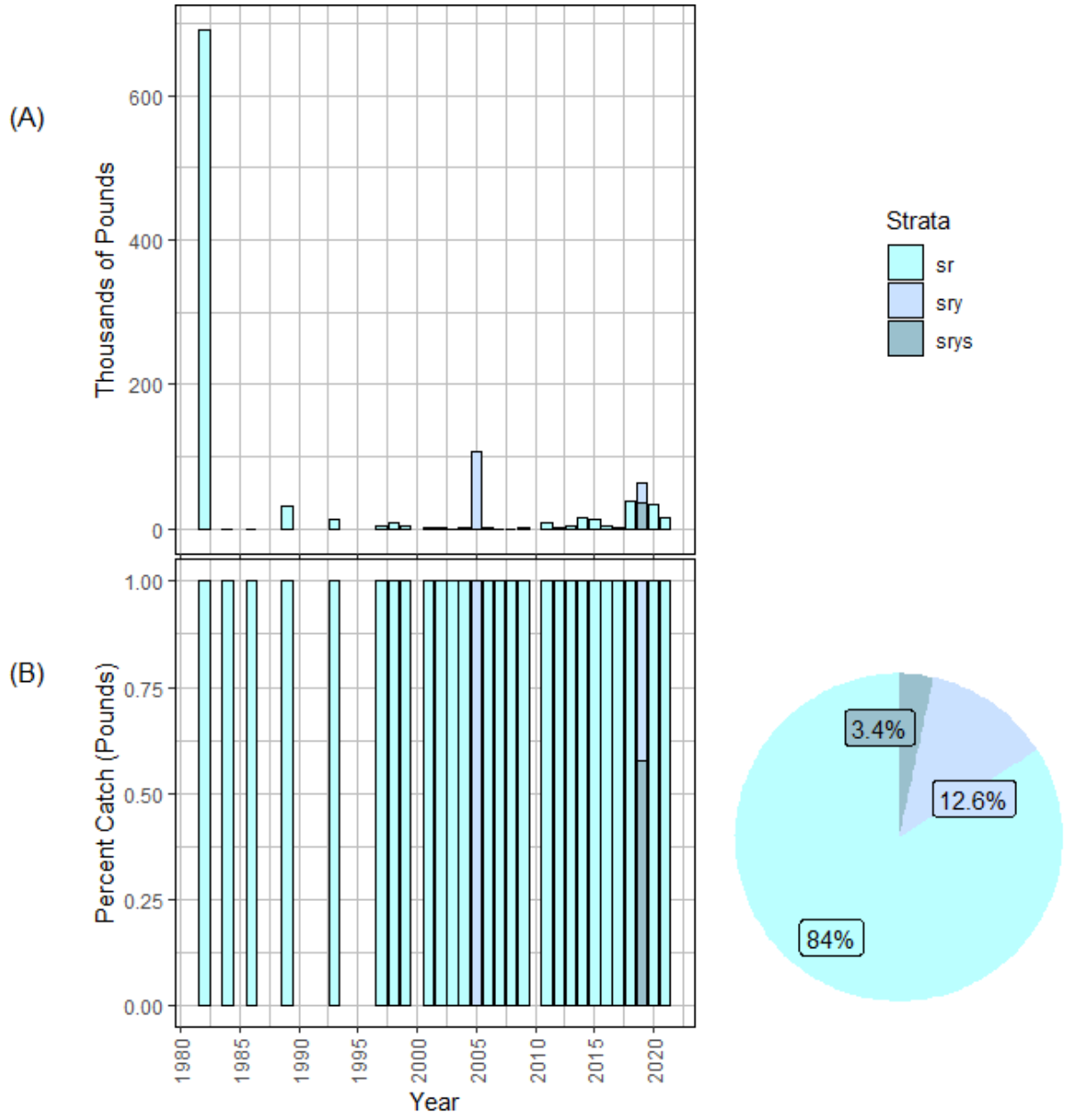


***Figure 6.*** *Annual landings estimates of Gulf of Mexico Yellowedge Grouper in thousands of pounds whole weight by hierarchy level (MRIP, LACreel 2014+, TPWD), defined by* ***s****pecies,* ***r****egion,* ***y****ear,* ***s****tate,* ***m****ode,* ***w****ave, and* ***a****rea. Landings are grouped by the strata at which average weights were estimated, the finest stratification being at the srysmwa level (Matter and Rios 2013). As an example, (srys) summarizes those landings-in-weight estimates originating from cells where average weights are specific to a particular* ***s****pecies,* ***r****egion,* ***y****ear, and* ***s****tate (i.e., weight observations collapsed across modes, waves, and areas). 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, shown as a proportion) and across all years (pie chart).*

## Appendix A

Additional Details of Survey Data and SEFSC Estimation

- MRIP Survey Methodology: 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).
  - 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 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 6-11). For SEDAR 85 Yellowedge Grouper, this includes any weights heavier than 42.966 pounds whole weight.
- SEFSC Estimates derived using SEDAR best practices (SEDAR-PW-07):
  - To ensure sampling can support MRIP estimates at finer stratifications than for which the survey was designed, (sub-state) domain estimates are only generated for established geographic domains. For Florida, this includes the sub-state domains of Florida in the FHS (1 = Florida panhandle, Escambia to Dixie; 2 = western Florida).
  - Between 1981 and 1985 in the Gulf of Mexico, 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, the MRIP combined for-hire mode must be split to provide estimates of 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).