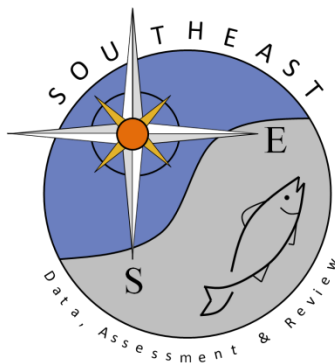


# South Atlantic Black Sea Bass (*Centropristis striata*) Length and Age Compositions for the Commercial Handline and Pots and Traps Fisheries

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# **South Atlantic Black Sea Bass (*Centropristis striata*) Length and Age Compositions for the Commercial Handline and Pots and Traps Fisheries**

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## Introduction

This document outlines the data and methodologies used to estimate length and age compositions of the commercial handline (HL) and pots and traps (TRP) landings for the SEDAR 108 South Atlantic Black Sea Bass Assessment. These compositions were estimated using data sources approved in SEDAR 2, and used in SEDAR 2U, SEDAR 25, SEDAR 56, SEDAR 76, and SEDAR 76U. Annual nominal and weighted length and age compositions are presented here, as well as mean length at age.

## Data Description

SEDAR 108 assesses South Atlantic Black Sea Bass from East Florida to Cape Hatteras, North Carolina. For this assessment, compositions were estimated for two fleets: commercial HL, and TRP. Two subregions were used for weighting the compositions by landings: 1) North and South Carolina (Car) and 2) Florida and Georgia (FL-GA). The commercial data sources utilized to generate the length and age compositions for the commercial fleets consists of length samples from the Trip Interview Program (Beggerly *et al.* 2022) and age samples collected by federal and state sampling programs.

## Commercial Length Compositions of Landings

### Length Samples

Length samples of commercial landings were obtained from the TIP database maintained by the NMFS Southeast Fisheries Science Center (SEFSC) and were filtered to remove biases that include samples from pooled trips and any size or effort bias. Samples from the HL and TRP fisheries were available starting in 1983.

These data were compiled using length bins of 1 centimeter (cm) with the midpoint of the bin being labeled. For this assessment, maximum total length (MTL), natural total length (*NTL*), and fork length (*FL*) were considered to be equivalent. Standard length in cm (*SL*) was converted to MTL using the following conversion equation (McGovern *et al.* 2002):

$$MTL = -1.083 + 1.35 * SL$$

A minimum length bin of 10 cm was used, and a maximum length bin of 50 cm was used, with fish falling outside of this range being pooled in the smallest or largest bin. Any fish lengths greater than 100 cm were excluded and assumed to be errors.

## Nominal Length Compositions

Nominal length compositions for the commercial HL fleet and commercial TRP fleet were estimated for Black Sea Bass landings from the east coast of Florida at the GMFMC/SAFMC boundary to Cape Hatteras, NC. Annual nominal length compositions were estimated using length bins of 1 cm, where for each year *i*, and length bin *j*,

$$LC_{i,j} = \frac{n_{i,j}}{n_i}$$

where  $n_{i,j}$  is the number of samples in year  $i$  and length bin  $j$ ;  $n_i$  is the number of samples in year  $i$  (i.e., summed across length bins); and  $LC_{i,j}$  is the proportion of the total number of sampled fish in each year  $i$  within each length bin  $j$ .

Nominal length compositions are shown by gear in Figure 1 with HL and TRP showing fairly similar length compositions in most years. Annual sample sizes of commercial lengths and trips are shown in Tables 1 and 2 for commercial HL and TRP, respectively, by weighting strata (Year & Subregion) as well as annual totals. For the nominal compositions, the total column is used to identify years with sufficient samples. Years with fewer than 30 length samples or fewer than 10 trips are recommended to be dropped from further analyses. All available years are presented in Tables 1 and 2, regardless of the recommendation to drop.

### Weighted Length Compositions

In order to account for potential spatial bias in sampling effort, and account for the spatial distribution of fishing effort, nominal length compositions were re-weighted using fleet-specific landings proportions by subregion (Car: North and South Carolina; FL-GA: Florida and Georgia) and year. Length sample sizes and number of trips are provided by weighting strata in Tables 1 and 2 for HL and TRP, respectively. Weighting strata (year, fleet, and subregion) with fewer than 30 length samples or fewer than 10 trips are recommended to be dropped from further analyses and have been highlighted in **red**.

For the commercial HL and TRP fleets, weighting strata-specific nominal length compositions were estimated using length bins of 1 cm, where for each year  $i$ , length bin  $j$ , and subregion  $r$ ,

$$LC_{i,j,r} = \frac{n_{i,j,r}}{n_{i,r}}$$

$n_{i,j,r}$  is the number of samples in year  $i$ , subregion  $r$ , and length bin  $j$ ;  $n_{i,r}$  is the number of samples in year  $i$  and subregion  $r$  (i.e., summed across length bins); and  $LC_{i,j,r}$  is the proportion of the total number of sampled fish in each year  $i$  and subregion  $r$  within each length bin  $j$ . Nominal length compositions by subregion are shown in Figures 2 and 3 for HL and TRP, respectively. The length compositions for HL were fairly similar across subregions, while TRP showed slightly more variability with Car having slightly larger fish in some years. Next, the weighting strata-specific length compositions were weighted based on the proportion of landings in each subregion  $r$  and year  $i$ .

Proportions of annual landings from each subregion  $r$  in year  $i$ ,  $p_{i,r}$ , were used to weight the strata-specific length compositions,  $LC_{i,j,r}$ , which were then summed across subregions  $r$

$$LC_{i,j} = \sum_r (LC_{i,j,r} * p_{i,r})$$

resulting in the final weighted estimates of landings length compositions,  $LC_{i,j}$ . This procedure would down-weight length compositions which only account for small proportions of landings.

For example, if 90% of the length samples come from a subregion which only accounts for 10% of the landings, this procedure would down-weight the length composition from that subregion. Annual proportions of landings by subregion were used in the weighting process, however, to protect confidentiality of the landings data, proportions are presented by time block in this report. The proportions of landings by time period (1983 – 2004; 2005 – 2025) and subregion,  $p_{i,r}$  are presented for commercial HL and TRP in Table 3. A split of the time series at 2004 was used as this is the midpoint of the data. The effects of this weighting procedure are shown in Figures 4 and 5 for HL and TRP, respectively. The effects of weighting are minimal in many years. The weighted length compositions for the commercial HL and TRP fleets are recommended for use in the model for years with sufficient sample sizes.

## Commercial Age Compositions of Landings

### Age Samples

The commercial age samples were a subset of the length samples. Age data compiled by the SEFSC Beaufort Laboratory were filtered to remove duplicated and biased data. For the commercial age compositions, a plus group of 11 was used, meaning all ages 11+ have been grouped into the same age bin.

### Nominal Age Compositions

Annual nominal age compositions were estimated for the commercial HL and TRP fleets. Any strata with fewer than 10 age samples or fewer than 10 trips were recommended to be dropped. Nominal age compositions of landings were estimated using the following equation within each year  $i$ , and age bin  $k$ ,

$$AC_{i,k} = \frac{a_{i,k}}{a_i}$$

where  $a_{i,k}$  is the number of age samples in year  $i$  and age bin  $k$ ;  $a_i$  is the number of age samples in year  $i$ ; and  $AC_{i,k}$  is the proportion of the total number of sampled fish in each year  $i$  within each age bin  $k$ . A minimum sample size threshold was recommended annually within each year stratum,  $AC_{ik}$ , where these were recommended to be dropped and excluded from further analyses if  $a_{is} < 10$  or if the number of trips the fish were sampled from is less than 10.

The annual nominal age compositions are shown by gear in Figure 6. As with the length compositions, age compositions were fairly similar across gears. Bubble plots showing the annual nominal age compositions are shown in Figures 7 and 8 for HL and TRP, respectively. Annual sample sizes of commercial ages and trips by gear group are shown in Table 4.

### Weighted Age Compositions

In order to account for potential sampling biases in the age data, the nominal age compositions are typically re-weighted by the weighted length compositions. In order for the data to be deemed sufficient for weighted age compositions, each stratum must contain a minimum of 10 ages from 10 trips, and there must be a corresponding weighted length composition (i.e. there must be a minimum of 30 lengths from 10 trips in each subregion). Summaries of data availability (including the availability of weighted age compositions) are shown in Table 5.

In order to weight the nominal age compositions, first a re-weighting factor,  $RW_{i,j}$ , was calculated within each year  $i$  and length bin  $j$  to correct the composition of the age data (number of age samples in each length bin divided by the annual total) to more closely represent the final length composition of the landings. The re-weighting factor was calculated as follows,

$$RW_{i,j} = \frac{LC_{i,j}}{a_{i,j}/a_i}$$

where  $LC_{i,j}$  is the weighted length composition in year  $i$  and length bin  $j$ ,  $a_{i,j}$  is the number of age samples in year  $i$  and length bin  $j$ , and  $a_i$  is the total number of age samples in year  $i$ . Under this methodology, if there were age samples  $a_{i,j}$  not represented in  $LC_{i,j}$ , they were down-weighted to zero and effectively dropped from further analysis. The final commercial weighted age compositions were estimated as

$$AC_{i,k} = \sum_j \left( RW_{i,j} * \frac{a_{i,j,k}}{a_i} \right)$$

where all length bins  $j$  within an age class  $k$  were summed, then re-scaled to sum to 1 across each year. The re-weighting factor will up-weight ages from less represented length bins and will generate a more representative estimate of landings' age compositions. Effects of the age composition weighting procedure are shown in Figures 9 and 10 for the commercial HL and TRP fleets, respectively. The figures show minimal differences between composition types in most years. Additionally, bubble plots showing the final weighted age distributions are shown in Figures 11 and 12, for the commercial HL and TRP fleets, respectively.

### Commercial Mean Length-at-Age

Fleet-specific mean length-at-age and associated sample sizes were also provided to the lead analyst to aid in model diagnostics. Mean length-at-age,  $MLAA_{i,k}$ , was estimated as the sum of all lengths  $L_{i,k}$  divided by the associated sample sizes  $a_{i,k}$  within each year  $i$  and age class  $k$ .

$$MLAA_{i,k} = \frac{\sum L_{i,k}}{a_{i,k}}$$

The mean length-at-age by year is shown in Figures 13 and 14 for commercial HL and TRP fleets, respectively.

## References

Beggerly, S., M. Stevens, H. Baertlein. 2022. Trip Interview Program Metadata. SEDAR74-DW14. 12pp.

McGovern, John C., et al. 2002. Temporal and spatial differences in life history parameters of black sea bass in the southeastern United States. *North American Journal of Fisheries Management* 22.4. 1151-1163.

## Tables

**Table 1.** Annual number of South Atlantic Black Sea Bass commercial **handline (HL)** length samples and associated trips by subregion (Car = North and South Carolina, FL-GA = Florida and Georgia), and totals across subregion. Years not meeting the recommended **30** fish or **10** trip minimum filter are highlighted in **red**. When evaluating data for nominal compositions, the sample sizes from the Total columns are used. When evaluating data for weighted compositions, the sample sizes from the subregion columns are used. Any year with either too few fish or too few trips is recommended to be excluded.

| Year | Car       |            | FL-GA     |            | Total     |            |
|------|-----------|------------|-----------|------------|-----------|------------|
|      | # of fish | # of trips | # of fish | # of trips | # of fish | # of trips |
| 1983 | 55        | <b>7</b>   | <b>0</b>  | <b>0</b>   | 55        | <b>7</b>   |
| 1984 | 1378      | 64         | 75        | <b>3</b>   | 1453      | 67         |
| 1985 | 780       | 43         | 298       | 20         | 1078      | 63         |
| 1986 | 1161      | 53         | 149       | 11         | 1310      | 64         |
| 1987 | 1005      | 55         | 205       | 14         | 1210      | 69         |
| 1988 | 781       | 47         | 145       | 11         | 926       | 58         |
| 1989 | 404       | 20         | 47        | <b>3</b>   | 451       | 23         |
| 1990 | 764       | 28         | 39        | <b>6</b>   | 803       | 34         |
| 1991 | 1136      | 53         | 62        | 10         | 1198      | 63         |
| 1992 | 860       | 27         | 78        | 12         | 938       | 39         |
| 1993 | 436       | 34         | 194       | 10         | 630       | 44         |
| 1994 | 614       | 37         | 60        | <b>6</b>   | 674       | 43         |
| 1995 | 251       | 33         | 51        | 14         | 302       | 47         |
| 1996 | 788       | 63         | 35        | <b>6</b>   | 823       | 69         |
| 1997 | 962       | 55         | 93        | 15         | 1055      | 70         |
| 1998 | 1620      | 90         | 69        | 12         | 1689      | 102        |
| 1999 | 1466      | 78         | 284       | 20         | 1750      | 98         |
| 2000 | 1005      | 86         | 78        | 14         | 1083      | 100        |
| 2001 | 1833      | 109        | 66        | 14         | 1899      | 123        |
| 2002 | 1440      | 80         | 142       | 13         | 1582      | 93         |
| 2003 | 900       | 92         | 114       | 16         | 1014      | 108        |
| 2004 | 1891      | 132        | 438       | 17         | 2329      | 149        |
| 2005 | 1569      | 141        | 34        | <b>4</b>   | 1603      | 145        |
| 2006 | 1622      | 151        | 79        | 10         | 1701      | 161        |
| 2007 | 974       | 118        | 37        | <b>5</b>   | 1011      | 123        |
| 2008 | 657       | 117        | <b>2</b>  | <b>2</b>   | 659       | 119        |
| 2009 | 900       | 96         | 52        | <b>8</b>   | 952       | 104        |
| 2010 | 658       | 91         | 127       | <b>6</b>   | 785       | 97         |
| 2011 | 461       | 46         | 345       | 16         | 806       | 62         |
| 2012 | 902       | 109        | 270       | 14         | 1172      | 123        |
| 2013 | 1289      | 149        | 248       | 29         | 1537      | 178        |
| 2014 | 1986      | 179        | 380       | 48         | 2366      | 227        |
| 2015 | 2289      | 186        | 144       | 20         | 2433      | 206        |
| 2016 | 775       | 96         | 112       | 10         | 887       | 106        |

|      |      |     |    |    |      |     |
|------|------|-----|----|----|------|-----|
| 2017 | 1043 | 111 | 53 | 18 | 1096 | 129 |
| 2018 | 867  | 96  | 84 | 12 | 951  | 108 |
| 2019 | 442  | 77  | 29 | 10 | 471  | 87  |
| 2020 | 212  | 39  | 77 | 13 | 289  | 52  |
| 2021 | 267  | 39  | 23 | 6  | 290  | 45  |
| 2022 | 408  | 65  | 70 | 7  | 478  | 72  |
| 2023 | 434  | 81  | 1  | 1  | 435  | 82  |
| 2024 | 388  | 86  | 9  | 6  | 397  | 92  |
| 2025 | 644  | 109 | 32 | 13 | 676  | 122 |

**Table 2.** Annual number of South Atlantic commercial *pots and traps (TRP)* length samples and associated trips by subregion (Car = North and South Carolina, FL-GA = Florida and Georgia), and totals across subregion. Years not meeting the recommended **30** fish or **10** trip minimum filter are highlighted in **red**. When evaluating data for nominal compositions, the sample sizes from the Total columns are used. When evaluating data for weighted compositions, the sample sizes from the subregion columns are used. Any year with either too few fish or too few trips is recommended to be dropped.

| Year | Car       |            | FL-GA     |            | Total     |            |
|------|-----------|------------|-----------|------------|-----------|------------|
|      | # of fish | # of trips | # of fish | # of trips | # of fish | # of trips |
| 1983 | 278       | <b>7</b>   | <b>0</b>  | <b>0</b>   | 278       | <b>7</b>   |
| 1984 | 870       | 12         | <b>0</b>  | <b>0</b>   | 870       | 12         |
| 1985 | 305       | <b>1</b>   | <b>0</b>  | <b>0</b>   | 305       | <b>1</b>   |
| 1986 | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   |
| 1987 | 195       | <b>3</b>   | <b>0</b>  | <b>0</b>   | 195       | <b>3</b>   |
| 1988 | 1525      | 16         | <b>0</b>  | <b>0</b>   | 1525      | 16         |
| 1989 | 369       | <b>4</b>   | <b>0</b>  | <b>0</b>   | 369       | <b>4</b>   |
| 1990 | 410       | <b>4</b>   | <b>0</b>  | <b>0</b>   | 410       | <b>4</b>   |
| 1991 | 603       | <b>9</b>   | <b>3</b>  | <b>1</b>   | 606       | 10         |
| 1992 | 716       | <b>7</b>   | <b>0</b>  | <b>0</b>   | 716       | <b>7</b>   |
| 1993 | 171       | <b>2</b>   | <b>0</b>  | <b>0</b>   | 171       | <b>2</b>   |
| 1994 | 852       | 11         | <b>0</b>  | <b>0</b>   | 852       | 11         |
| 1995 | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   |
| 1996 | 506       | 11         | <b>0</b>  | <b>0</b>   | 506       | 11         |
| 1997 | 757       | 12         | <b>0</b>  | <b>0</b>   | 757       | 12         |
| 1998 | 428       | <b>3</b>   | <b>0</b>  | <b>0</b>   | 428       | <b>3</b>   |
| 1999 | 868       | 11         | <b>0</b>  | <b>0</b>   | 868       | 11         |
| 2000 | 448       | <b>4</b>   | <b>0</b>  | <b>0</b>   | 448       | <b>4</b>   |
| 2001 | 435       | <b>5</b>   | <b>0</b>  | <b>0</b>   | 435       | <b>5</b>   |
| 2002 | 4265      | 611        | <b>0</b>  | <b>0</b>   | 4265      | 611        |
| 2003 | 7781      | 1044       | <b>0</b>  | <b>0</b>   | 7781      | 1044       |
| 2004 | 1249      | 13         | <b>0</b>  | <b>0</b>   | 1249      | 13         |
| 2005 | 712       | 17         | <b>0</b>  | <b>0</b>   | 712       | 17         |
| 2006 | 1586      | 44         | <b>0</b>  | <b>0</b>   | 1586      | 44         |
| 2007 | 2927      | 86         | <b>0</b>  | <b>0</b>   | 2927      | 86         |
| 2008 | 2371      | 95         | <b>21</b> | <b>1</b>   | 2392      | 96         |
| 2009 | 2726      | 99         | 559       | 16         | 3285      | 115        |
| 2010 | 1092      | 52         | 885       | 26         | 1977      | 78         |
| 2011 | 625       | 26         | 943       | 27         | 1568      | 53         |
| 2012 | 480       | 18         | 812       | 22         | 1292      | 40         |
| 2013 | 239       | 13         | 864       | 21         | 1103      | 34         |
| 2014 | 542       | 26         | 61        | <b>2</b>   | 603       | 28         |
| 2015 | 810       | 33         | 79        | <b>2</b>   | 889       | 35         |
| 2016 | 398       | 17         | <b>0</b>  | <b>0</b>   | 398       | 17         |
| 2017 | 378       | 18         | 257       | <b>7</b>   | 635       | 25         |

|      |     |    |     |   |     |    |
|------|-----|----|-----|---|-----|----|
| 2018 | 614 | 26 | 131 | 2 | 745 | 28 |
| 2019 | 320 | 16 | 64  | 4 | 384 | 20 |
| 2020 | 204 | 10 | 68  | 1 | 272 | 11 |
| 2021 | 182 | 8  | 0   | 0 | 182 | 8  |
| 2022 | 15  | 1  | 0   | 0 | 15  | 1  |
| 2023 | 236 | 10 | 0   | 0 | 236 | 10 |
| 2024 | 82  | 5  | 0   | 0 | 82  | 5  |
| 2025 | 96  | 2  | 0   | 0 | 96  | 2  |

**Table 3.** Proportion of landings by subregion for two time blocks (1983 – 2004, 2005 - 2025) for the commercial handline (HL) and pots and traps (TRP) fleets. Car = North and South Carolina, FL-GA = Florida and Georgia.

| <i>Time Block</i>  | <i>HL</i>     |               | <i>TRP</i>    |               |
|--------------------|---------------|---------------|---------------|---------------|
|                    | <i>Car</i>    | <i>FL-GA</i>  | <i>Car</i>    | <i>FL-GA</i>  |
| <i>1983 – 2004</i> | <i>0.8568</i> | <i>0.1432</i> | <i>0.9899</i> | <i>0.0101</i> |
| <i>2005 – 2025</i> | <i>0.8990</i> | <i>0.1010</i> | <i>0.9499</i> | <i>0.0501</i> |

**Table 4.** Annual number of South Atlantic Black Sea Bass commercial age samples and associated trips **by fleet**, for the commercial handline (HL) and pots and traps (TRP) fleets. Years not meeting the recommended **10** fish or **10** trip minimum filter are highlighted in **red**. Any year with either too few fish or too few trips is recommended to be excluded.

| Year | HL        |            | TRP       |            |
|------|-----------|------------|-----------|------------|
|      | # of fish | # of trips | # of fish | # of trips |
| 1997 | 32        | <b>4</b>   | <b>0</b>  | <b>0</b>   |
| 1998 | 29        | <b>4</b>   | <b>0</b>  | <b>0</b>   |
| 1999 | <b>0</b>  | <b>0</b>   | 120       | 1          |
| 2000 | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   |
| 2001 | <b>0</b>  | <b>0</b>   | <b>0</b>  | <b>0</b>   |
| 2002 | 81        | <b>4</b>   | <b>0</b>  | <b>0</b>   |
| 2003 | 385       | 18         | <b>0</b>  | <b>0</b>   |
| 2004 | 571       | 40         | 115       | <b>5</b>   |
| 2005 | 767       | 72         | 342       | 15         |
| 2006 | 706       | 101        | 855       | 34         |
| 2007 | 813       | 113        | 2080      | 82         |
| 2008 | 525       | 115        | 2072      | 93         |
| 2009 | 586       | 97         | 2325      | 110        |
| 2010 | 560       | 83         | 1833      | 75         |
| 2011 | 456       | 46         | 1291      | 49         |
| 2012 | 1052      | 115        | 1133      | 40         |
| 2013 | 1237      | 155        | 844       | 34         |
| 2014 | 1884      | 173        | 564       | 27         |
| 2015 | 1845      | 174        | 611       | 32         |
| 2016 | 665       | 97         | 394       | 19         |
| 2017 | 966       | 118        | 545       | 26         |
| 2018 | 808       | 100        | 594       | 27         |
| 2019 | 422       | 74         | 374       | 19         |
| 2020 | 257       | 53         | 263       | 11         |
| 2021 | 277       | 48         | 180       | <b>8</b>   |
| 2022 | 498       | 112        | 38        | <b>2</b>   |
| 2023 | 432       | 92         | 234       | 10         |
| 2024 | 359       | 88         | 81        | <b>4</b>   |
| 2025 | 248       | 90         | 95        | <b>2</b>   |

**Table 5.** Data availability summary by data product and fleet, for the commercial handline (HL) and pots and traps (TRP) fleets. Strata highlighted in green are appropriate for use in the stock assessment model. Strata highlighted in red are not recommended for use in the stock assessment model because of insufficient sample sizes. Strata highlighted in gray have no data available.

| Year | Nominal Length Comps |     | Weighted Length Comps |     | Nominal Age Comps |     | Weighted Age Comps |     |
|------|----------------------|-----|-----------------------|-----|-------------------|-----|--------------------|-----|
|      | HL                   | TRP | HL                    | TRP | HL                | TRP | HL                 | TRP |
| 1983 |                      |     |                       |     |                   |     |                    |     |
| 1984 |                      |     |                       |     |                   |     |                    |     |
| 1985 |                      |     |                       |     |                   |     |                    |     |
| 1986 |                      |     |                       |     |                   |     |                    |     |
| 1987 |                      |     |                       |     |                   |     |                    |     |
| 1988 |                      |     |                       |     |                   |     |                    |     |
| 1989 |                      |     |                       |     |                   |     |                    |     |
| 1990 |                      |     |                       |     |                   |     |                    |     |
| 1991 |                      |     |                       |     |                   |     |                    |     |
| 1992 |                      |     |                       |     |                   |     |                    |     |
| 1993 |                      |     |                       |     |                   |     |                    |     |
| 1994 |                      |     |                       |     |                   |     |                    |     |
| 1995 |                      |     |                       |     |                   |     |                    |     |
| 1996 |                      |     |                       |     |                   |     |                    |     |
| 1997 |                      |     |                       |     |                   |     |                    |     |
| 1998 |                      |     |                       |     |                   |     |                    |     |
| 1999 |                      |     |                       |     |                   |     |                    |     |
| 2000 |                      |     |                       |     |                   |     |                    |     |
| 2001 |                      |     |                       |     |                   |     |                    |     |
| 2002 |                      |     |                       |     |                   |     |                    |     |
| 2003 |                      |     |                       |     |                   |     |                    |     |
| 2004 |                      |     |                       |     |                   |     |                    |     |
| 2005 |                      |     |                       |     |                   |     |                    |     |
| 2006 |                      |     |                       |     |                   |     |                    |     |
| 2007 |                      |     |                       |     |                   |     |                    |     |
| 2008 |                      |     |                       |     |                   |     |                    |     |
| 2009 |                      |     |                       |     |                   |     |                    |     |
| 2010 |                      |     |                       |     |                   |     |                    |     |
| 2011 |                      |     |                       |     |                   |     |                    |     |
| 2012 |                      |     |                       |     |                   |     |                    |     |
| 2013 |                      |     |                       |     |                   |     |                    |     |
| 2014 |                      |     |                       |     |                   |     |                    |     |
| 2015 |                      |     |                       |     |                   |     |                    |     |
| 2016 |                      |     |                       |     |                   |     |                    |     |
| 2017 |                      |     |                       |     |                   |     |                    |     |
| 2018 |                      |     |                       |     |                   |     |                    |     |
| 2019 |                      |     |                       |     |                   |     |                    |     |
| 2020 |                      |     |                       |     |                   |     |                    |     |
| 2021 |                      |     |                       |     |                   |     |                    |     |
| 2022 |                      |     |                       |     |                   |     |                    |     |
| 2023 |                      |     |                       |     |                   |     |                    |     |
| 2024 |                      |     |                       |     |                   |     |                    |     |
| 2025 |                      |     |                       |     |                   |     |                    |     |

## Figures

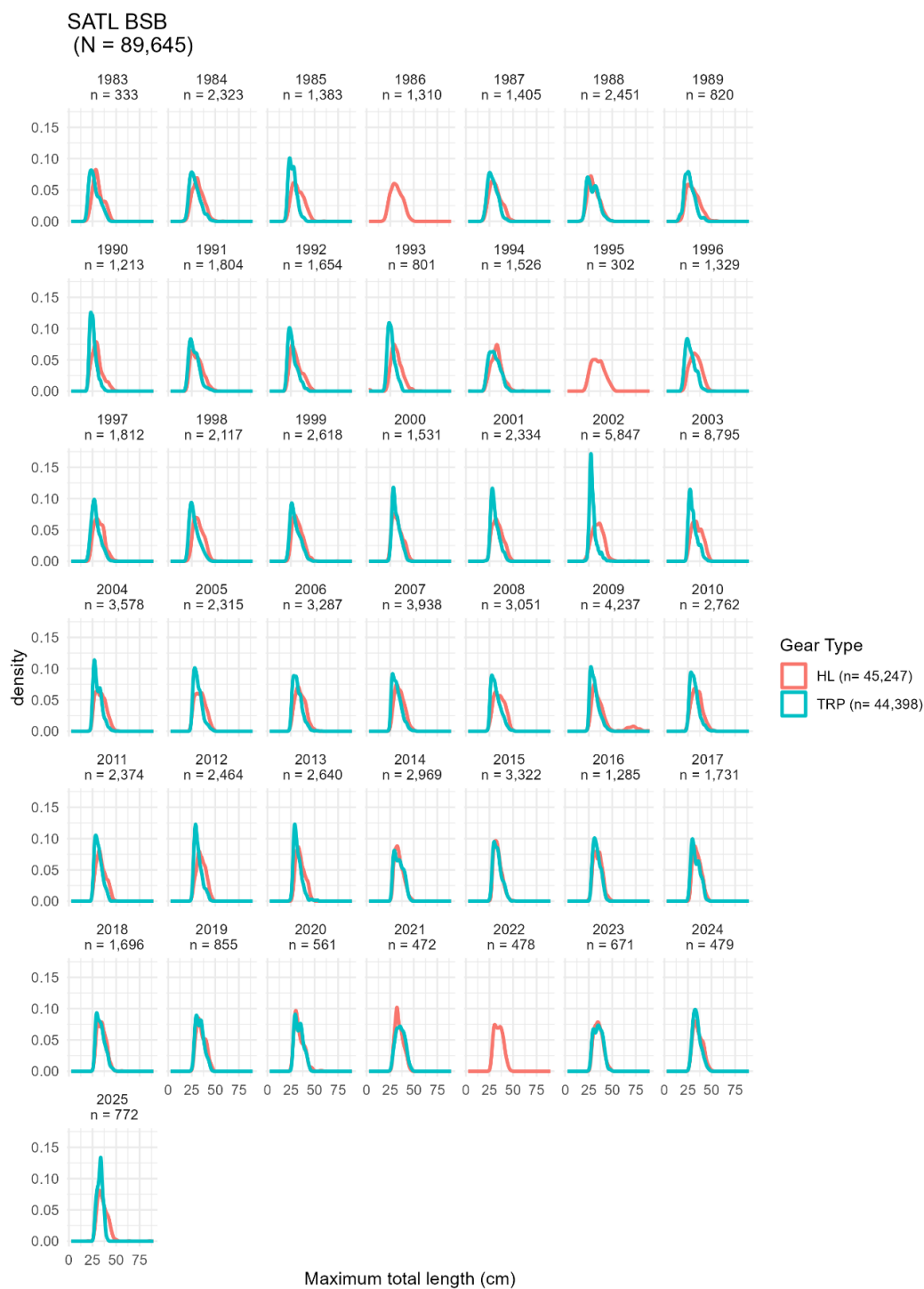


Figure 1. Annual nominal length distributions for the South Atlantic Black Sea Bass commercial handline (HL) and pots and traps (TRP) fisheries.

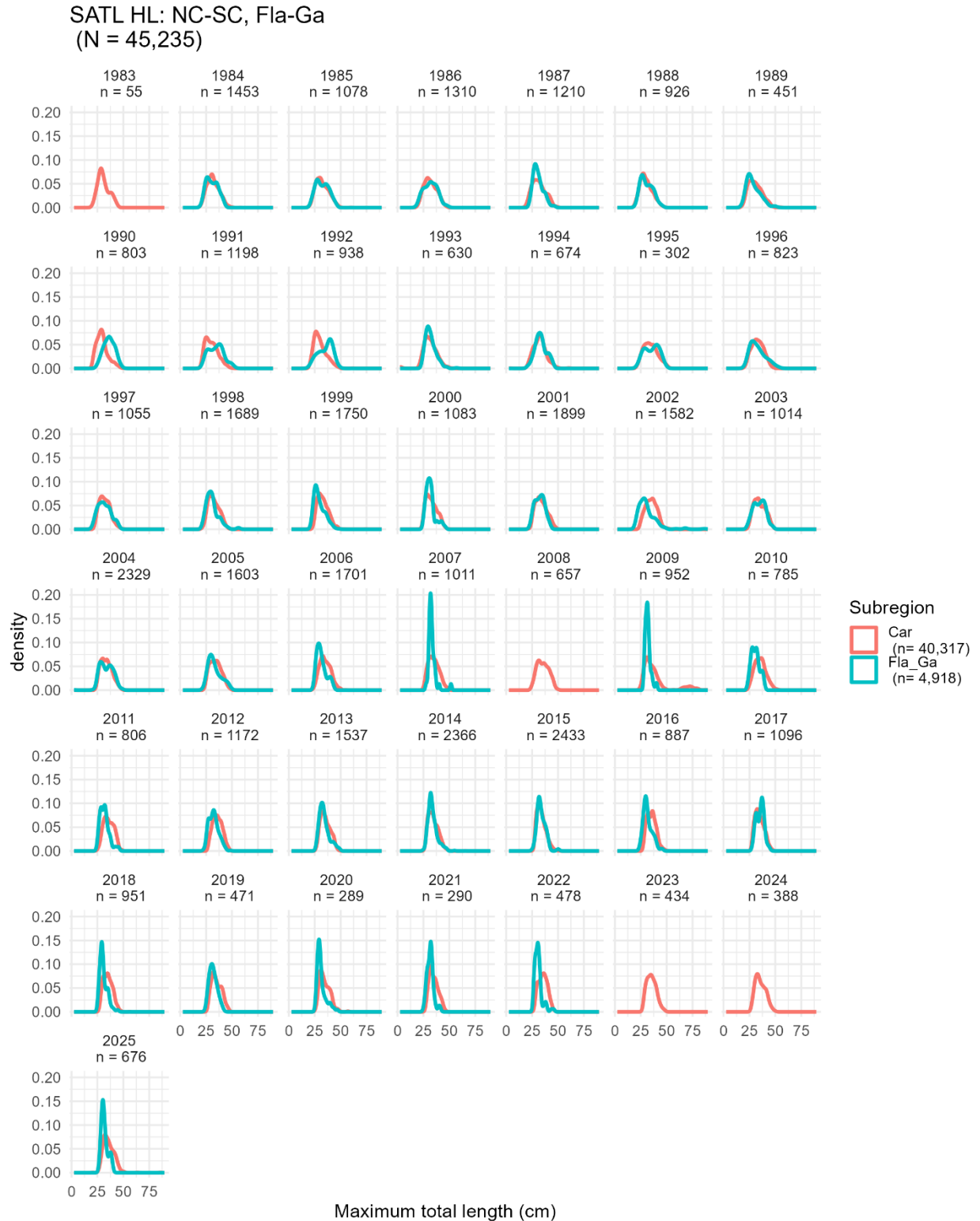


Figure 2. Annual nominal length distributions for the South Atlantic Black Sea Bass commercial **handline (HL) fishery** by weighting subregion (Car = North and South Carolina, FL-GA = Florida and Georgia).

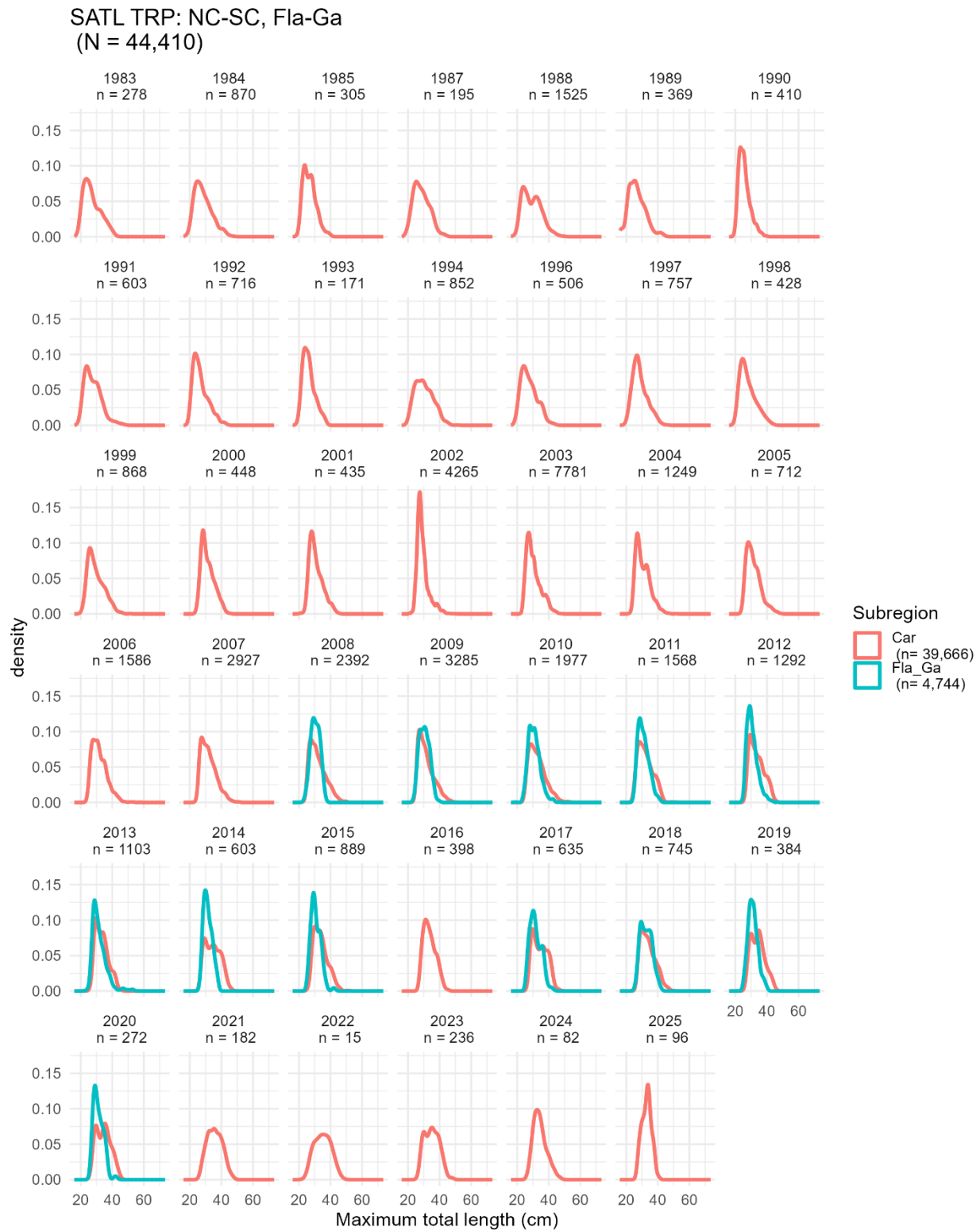


Figure 3. Annual nominal length distributions for the South Atlantic Black Sea Bass commercial pots and traps (TRP) fishery by weighting subregion (Car = North and South Carolina, FL-GA = Florida and Georgia).



Figure 4. Annual comparison of the nominal and weighted length compositions for the South Atlantic Black Sea Bass commercial *handline* (HL) fishery.

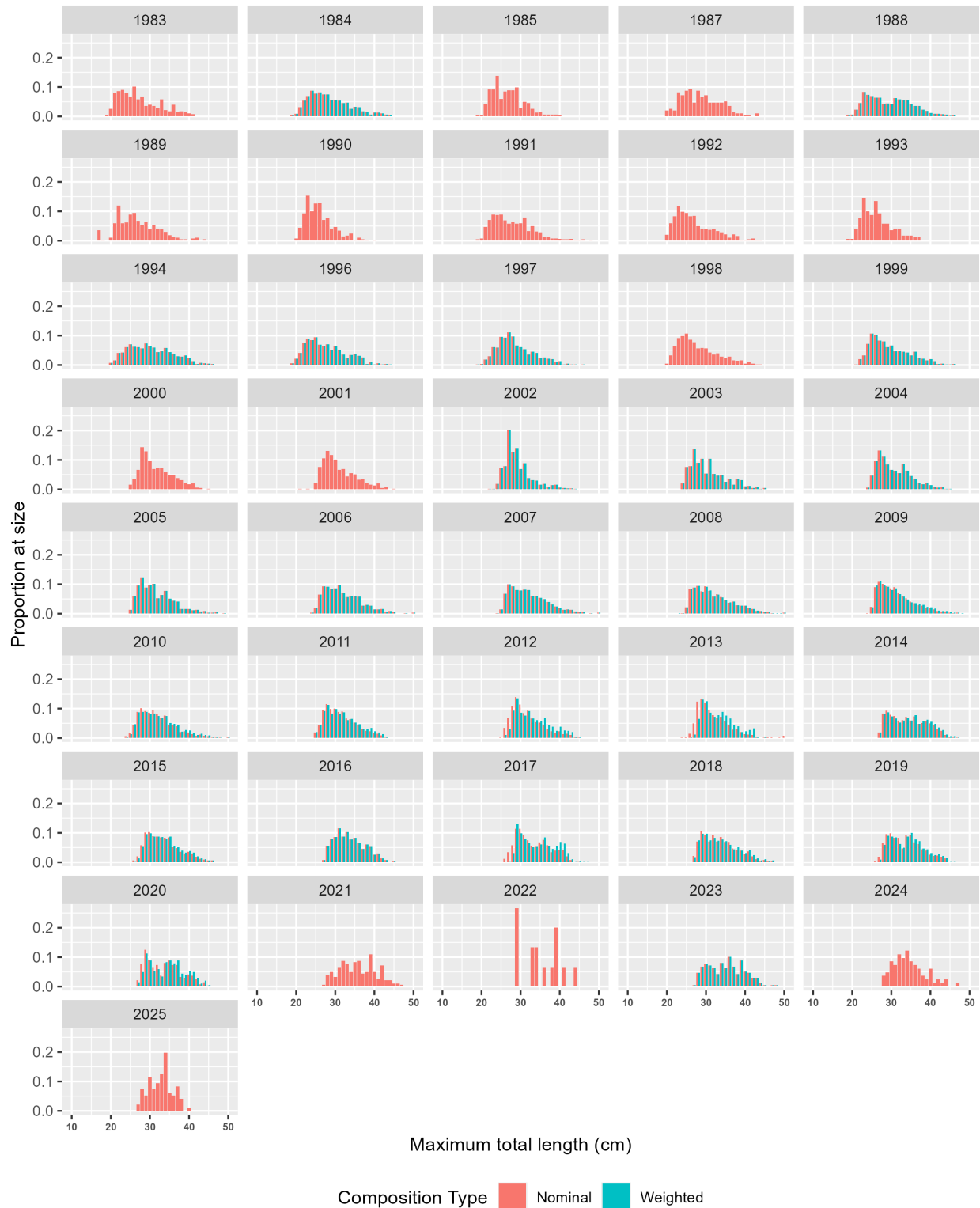


Figure 5. Annual comparison of the nominal and weighted length compositions for the South Atlantic Black Sea Bass commercial *pots and traps (TRP)* fishery.

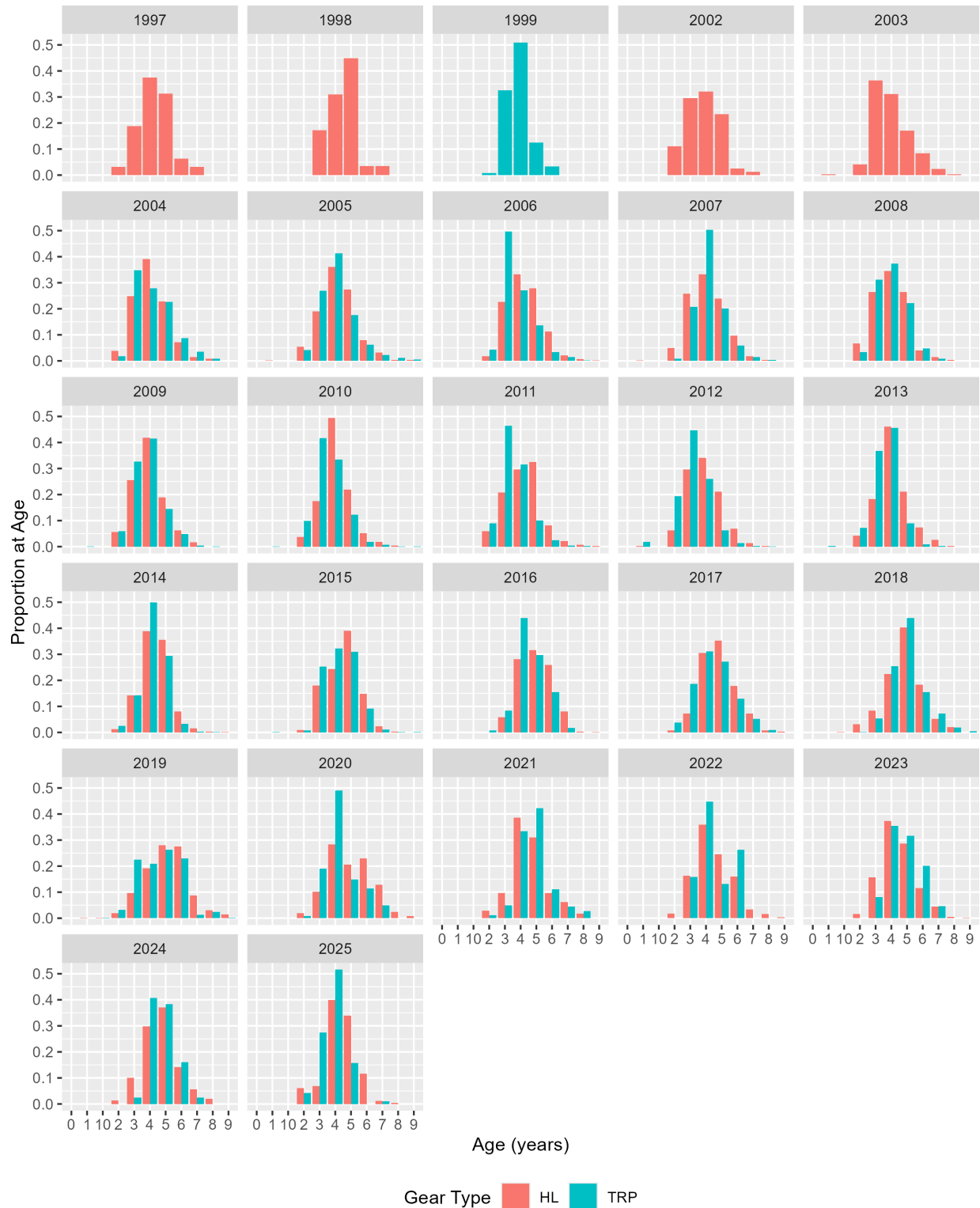


Figure 6. Annual nominal age compositions for the South Atlantic Black Sea Bass commercial handline (HL) and pots and traps (TRP) fisheries.

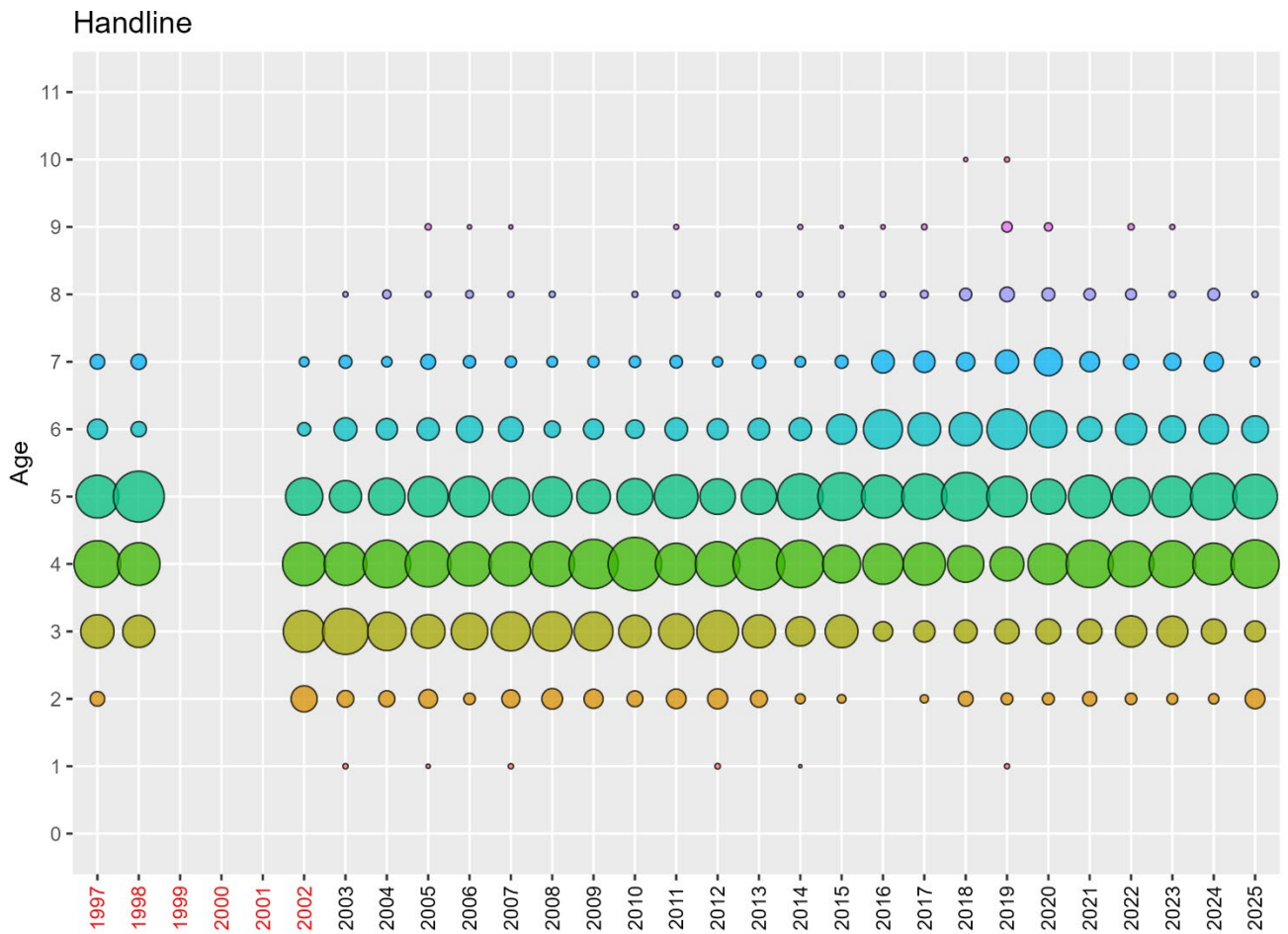


Figure 7. Annual nominal age compositions for the South Atlantic Black Sea Bass commercial **handline (HL) fishery**. The size of the dots represents the relative proportion at age. Years recommended to be excluded have been highlighted in **red**.

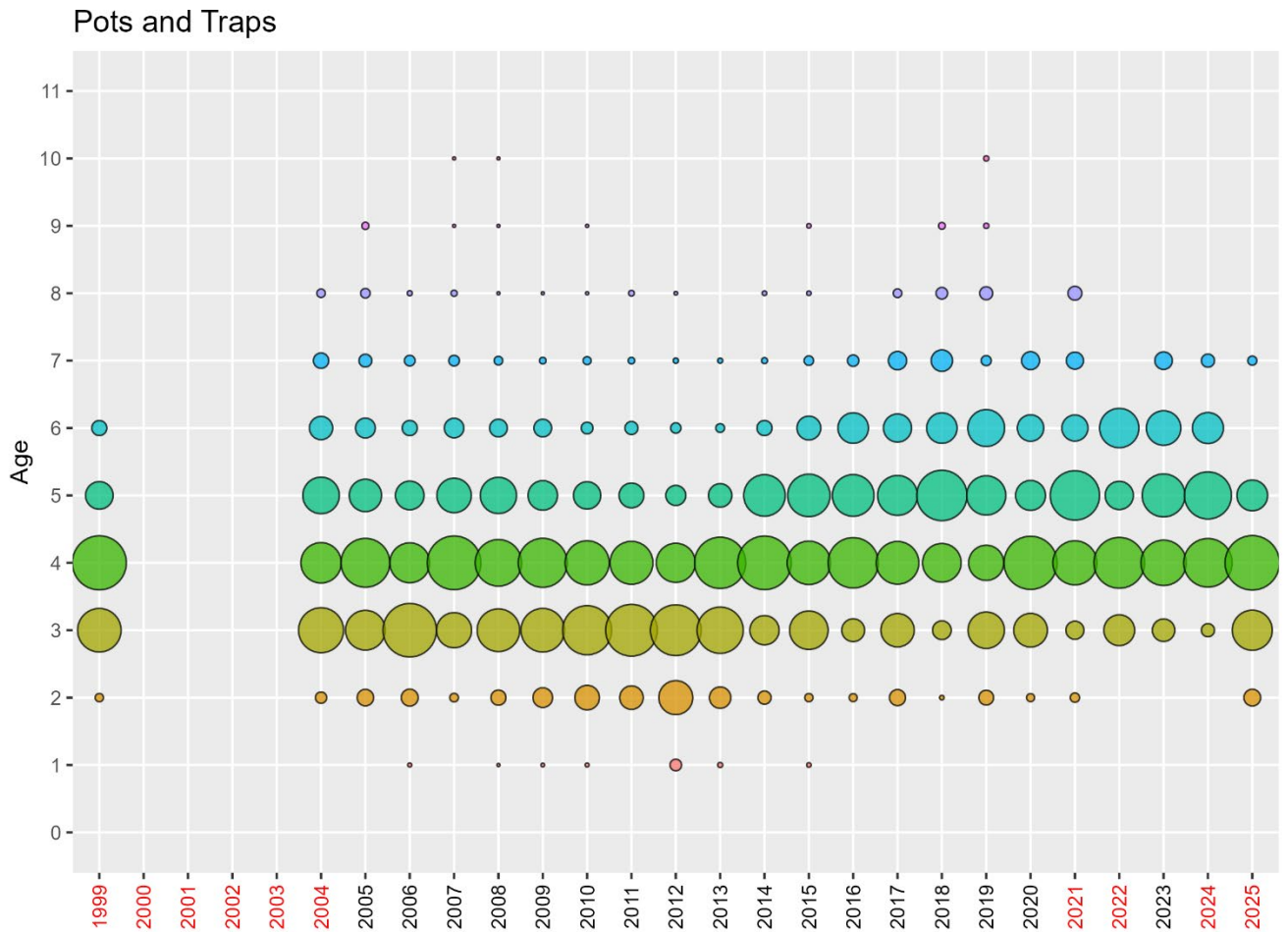


Figure 8. Annual nominal age compositions for the South Atlantic Black Sea Bass commercial **pots and traps (TRP) fishery**. The size of the dots represents the relative proportion at age. Years recommended to be excluded have been highlighted in **red**.

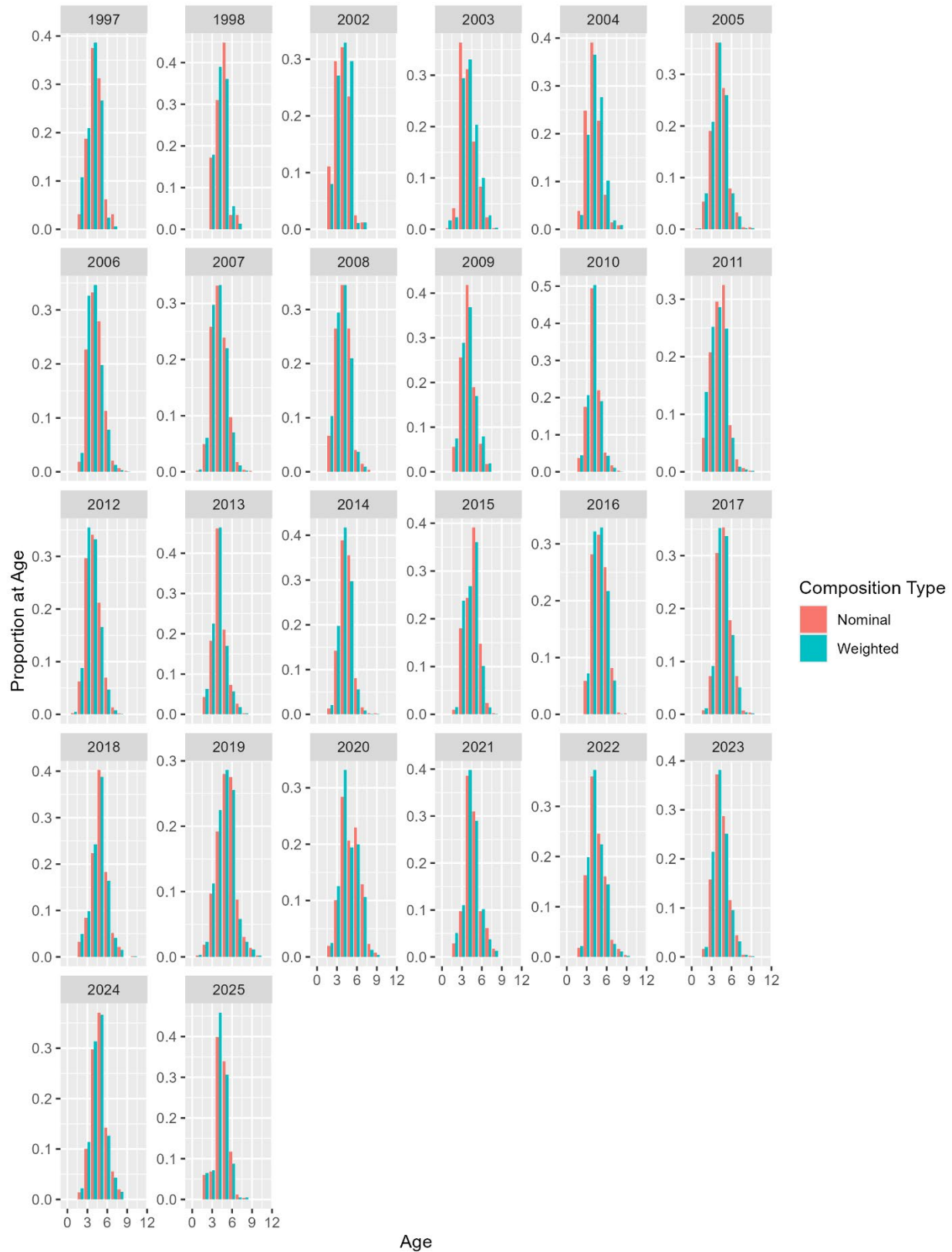


Figure 9. Annual comparison of the nominal and weighted age compositions for the South Atlantic Black Sea Bass commercial **handline (HL)** fishery.

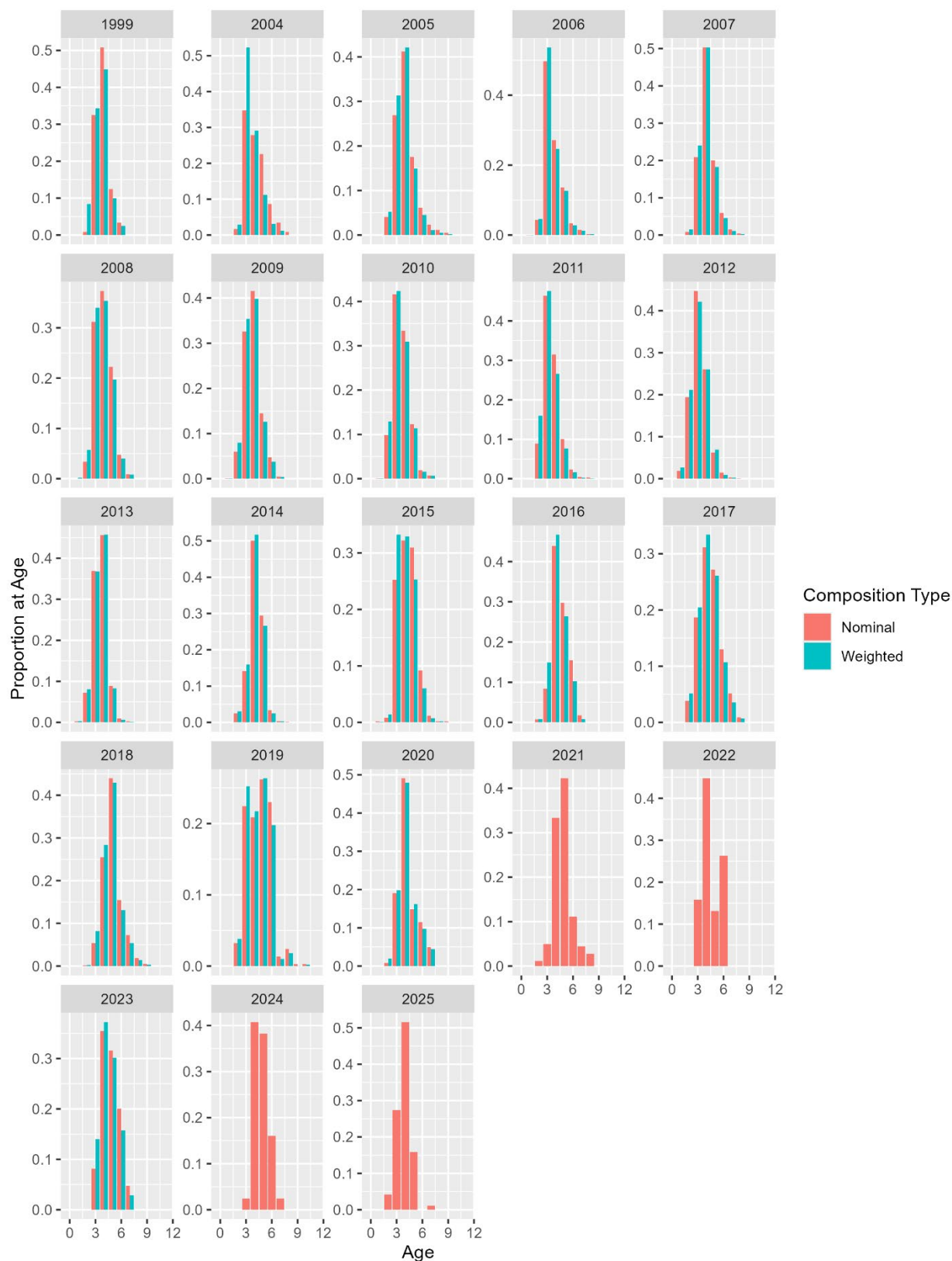


Figure 10. Annual comparison of the nominal and weighted age compositions for the South Atlantic Black Sea Bass commercial pots and traps (TRP) fishery.

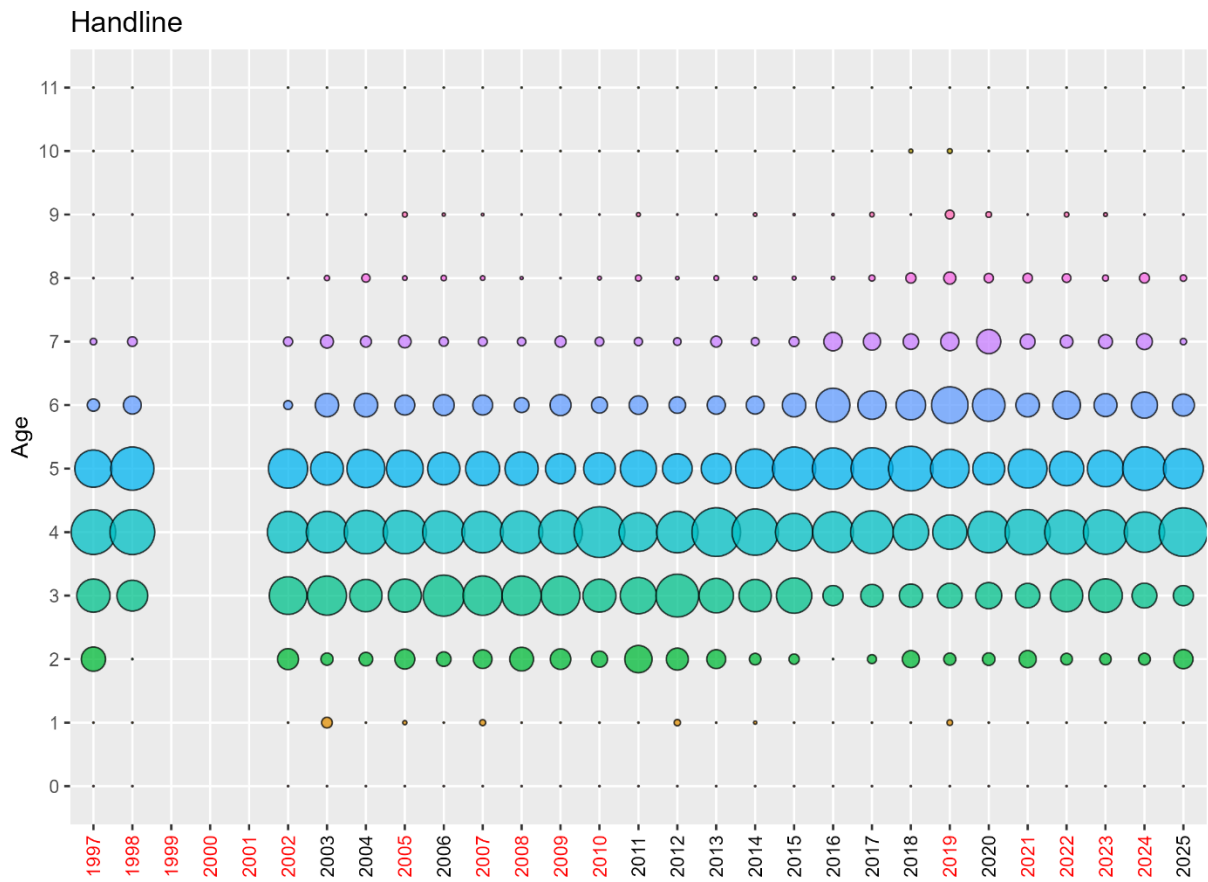


Figure 11. Annual weighted age compositions for the South Atlantic Black Sea Bass commercial **handline (HL) fishery**. The size of the dots represents the relative proportion at age. Years recommended to be dropped have been highlighted in **red**.

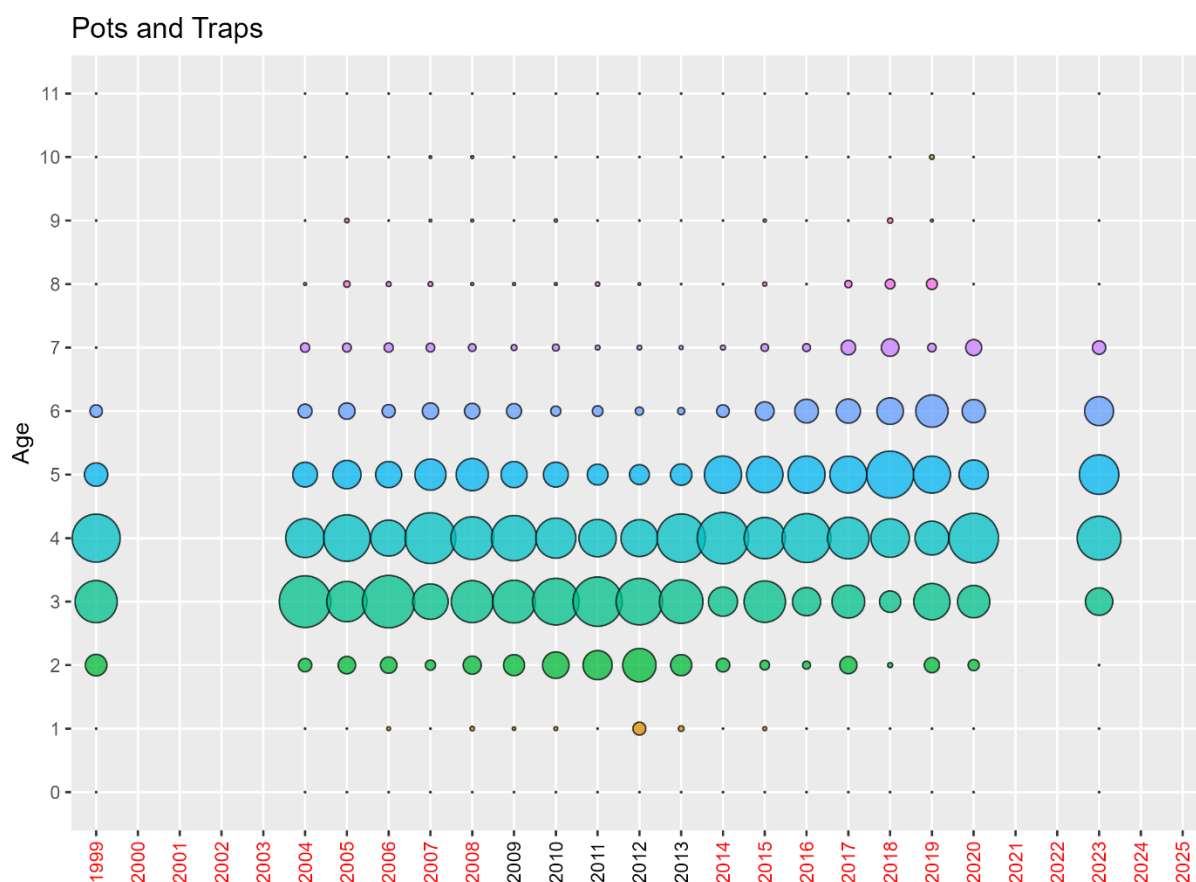


Figure 12. Annual weighted age compositions for the South Atlantic Black Sea Bass commercial **pots and traps (TRP) fishery**. The size of the dots represents the relative proportion at age. Years recommended to be dropped have been highlighted in **red**.

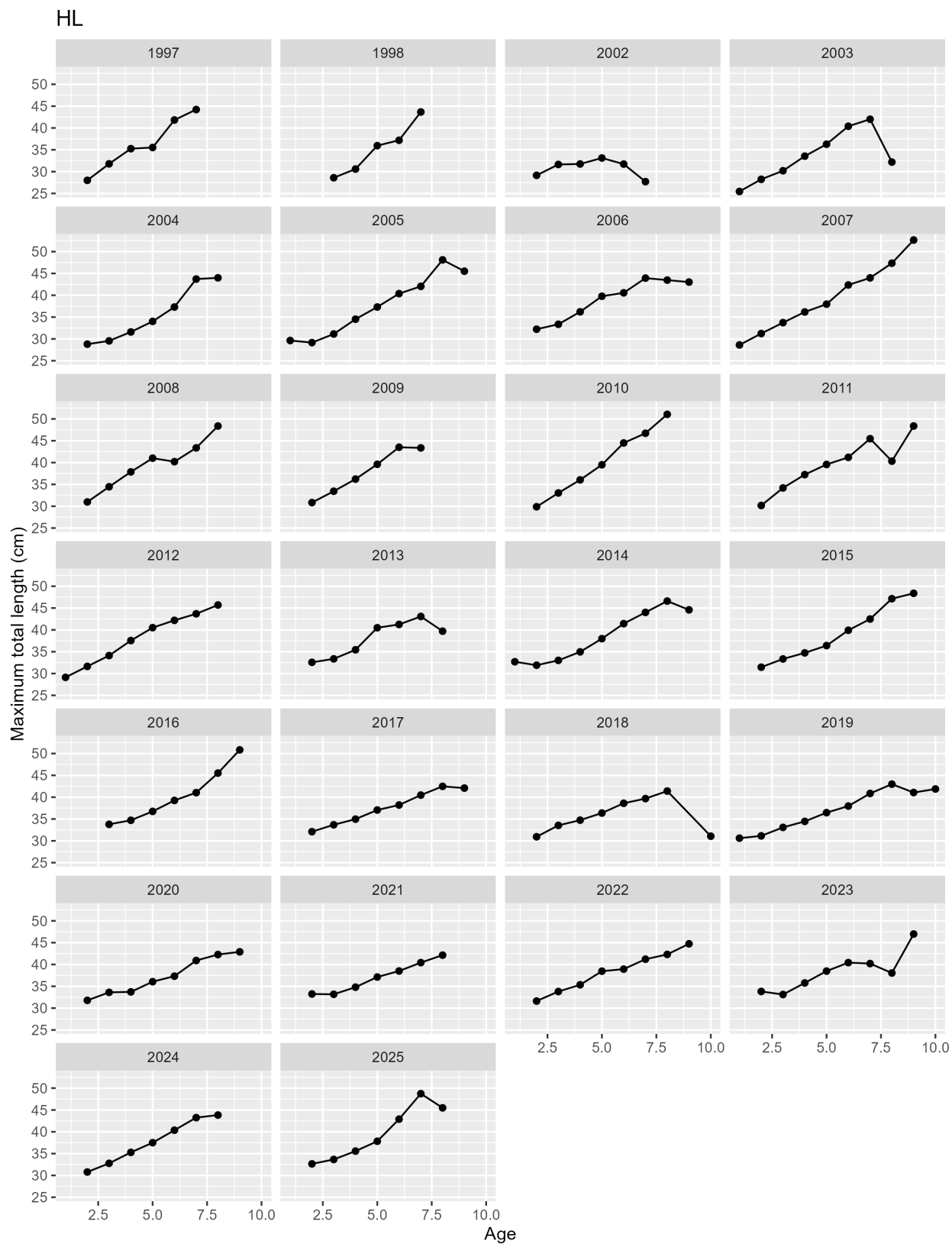


Figure 13. Annual mean length at age for the South Atlantic Black Sea Bass commercial handline (HL) fishery.

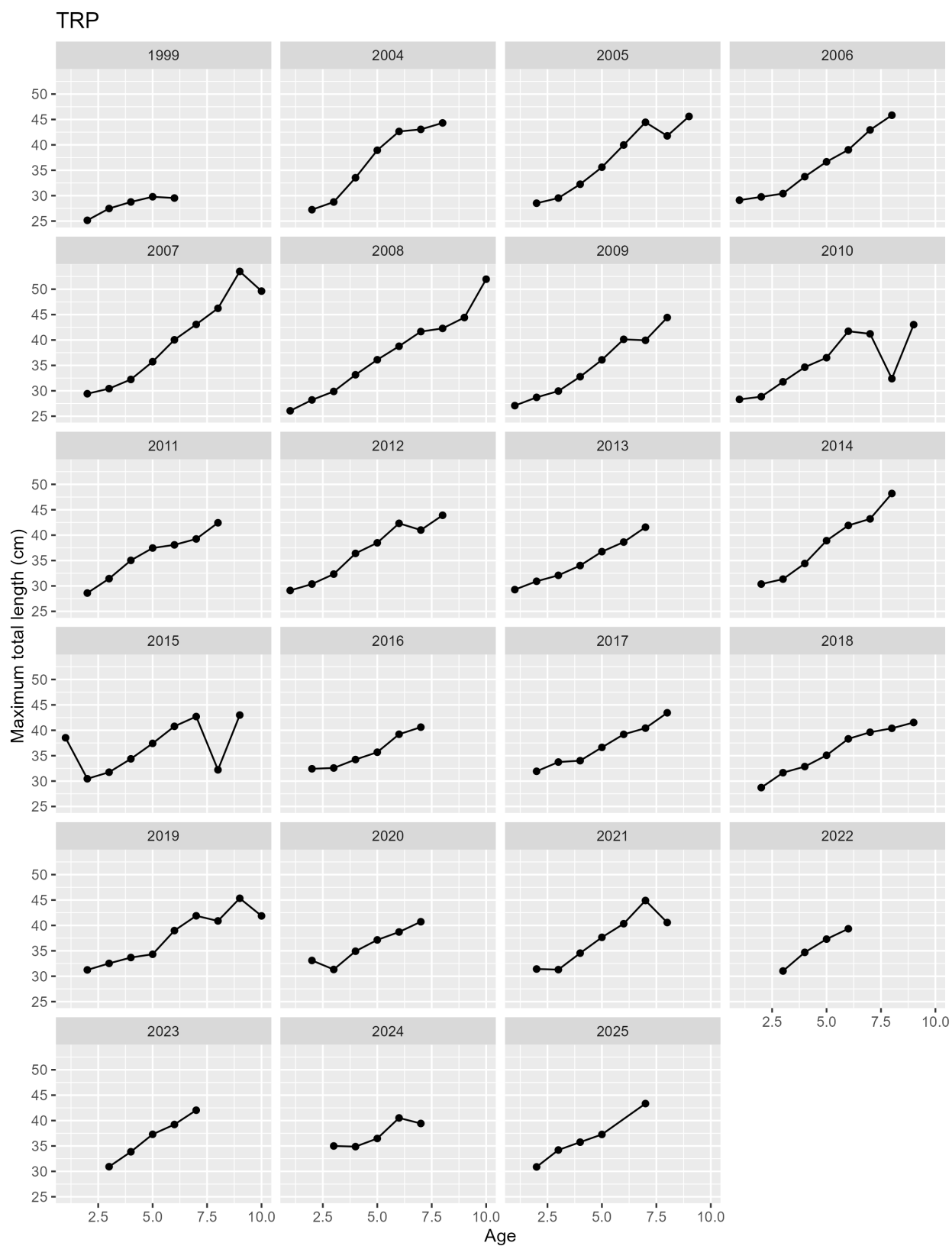


Figure 14. Annual mean length at age for the South Atlantic Black Sea Bass commercial pots and traps (TRP) fishery.