# South Atlantic Red Snapper (*Lutjanus campechanus*) length and age compositions from the recreational fishery

Samantha M. Binion-Rock

SEDAR90-DW-12

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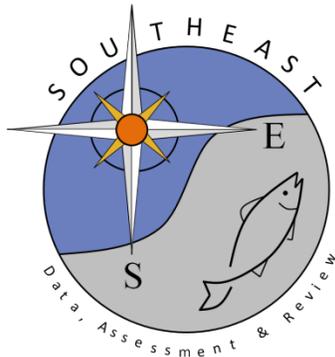
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Introduction

This document provides preliminary nominal length and age compositions of recreational landings for the SEDAR 90 Red Snapper (*Lutjanus campechanus*) assessment. Sample sizes are also included in this document to help facilitate discussion at the Data Workshop about potential options for providing weighted compositions. This document will be appended after the data workshop to include weighted length and age compositions.

Data Description

SEDAR 90 assesses all South Atlantic Red Snapper in federal waters extending from North Carolina to the east coast of Florida. A total of 46,788 lengths from 23 sampling programs (Tables 1&2) were included in the nominal length compositions and 31,386 ages from 21 programs (Tables 1&3) were included in the nominal age compositions.

Length (n=361) and age (n=1,343) data collected by the Florida Fish and Wildlife Conservation Commission (FWC) under the Exempted Fishing Permit (EFP) program were submitted for consideration for the first time for SEDAR 90. This program was initiated in 2024 and consists of three separate projects: (1) EFP For-Hire, (2) EFP lottery, and (3) EFP study fleet that allows anglers to harvest Red Snapper outside of the one-day federal recreational season (FWC 2024; SEDAR90-WP-21). Since these samples were collected using a special permit that allows anglers to retain fish that would be traditionally discarded, they were excluded in the length and age compositions.

The sampling programs contributing the largest numbers of length and/or age samples are described below.

Southeast Region Headboat Survey (SRHS)

The SRHS program estimates landings and effort for headboat vessels. The SRHS program began in 1972 in North and South Carolina, expanded to Georgia and northeast Florida (Nassau-Indian River counties) in 1976, and to southeast Florida in (St. Lucie-Monroe counties) in 1978 (Fitzpatrick et al 2017). Biological samples (e.g. length, weight, and otoltihs) are collected as part of the SRHS dockside intercept sampling program (DISP) component of the SRHS program (Fitzpatrick et al. 2017). DISP sampling was temporarily suspended in March 2020 due to the

COVID pandemic and no biological samples were collected. DISP biological sampling resumed in July 2021 once NMFS/SEFSC approved safety measures were approved (Cheshire et al. 2023). SRHS sampled 16,070 Red Snapper for length and of those fish, 5,646 were also sampled for age.

Recreational Mini Season Sampling

The largest number of samples were collected during the recreational mini season during from FWC's EFL RS (n = 11,537 length and age samples) and RECFIN EFL RS (n = 5,797 length and age samples) programs. Sampling began in 2012 and the focus is to collect length, weight, and otoliths from Red Snapper harvested from private and charter modes during the mini season. Samples are collected through either a randomized catch and effort survey or supplemental biological sampling. The catch and effort survey began in 2012 and randomly samples anglers at sites near major inlets spanning from Cumberland Sound to Port St. Lucie. The supplemental biological sampling began in 2012. From 2012-2014 samples were collect using a targeted biological sampling approach where sites were not randomly selected but instead sites known for landing higher numbers of Red Snapper were selected. From 2017-2019 sites were selected using a randomized sampling design (SEDAR90-WP-21).

Marine Recreational Information Program (MRIP)

MRIP (formally known as the Marine Recreational Fishing Statistics Survey, MRFSS) began in March 1981 and samples all states in the South Atlantic. The access point angler survey (APAIS) component of MRIP collects information on recreational catch and fishing trip characteristics, including fish lengths and weights, from anglers at public marine fishing access sites. APAIS samplers do not collect age structures. In the South Atlantic, APAIS samples recreational fishers from private, shore, and charterboat modes. APAIS sampling was temporarily suspending during Wave 2 in 2020 because of the COVID pandemic. APAIS sampling resumed in all states by August 2020 (Wave 4), however, sampling of fish lengths and weights were reduced due to social distancing guidelines and field officer safety protocols (NMFS OST 2023). For intercepted angler trips where both fish length and weight are missing, MRIP uses hot and cold-deck imputation to impute lengths (NMFS OST 2023). Imputed lengths were excluded from length composition analyses. MRIP provided 3,516 Red Snapper lengths.

Fleet Structure

Three recreational modes are included for SEDAR 90 charter (CB), headboat (HB), and private (PR; Fig. 1). In SEDAR 73, these modes were assigned to two fleets gen rec (GR) and HB. The GR fleet consists of the CB and private PR modes. Prior to 1998, the number of length samples are higher for the HB fleet compared to the GR. After 1998, GR normally has larger numbers of length samples than HB (Table 4). A similar pattern also occurs with the age data and there are very few age samples for the GR fleet prior to 2000 and after 2000 the GR fleet generally has a larger number of age samples than the HB fleet (Tables 5). For both fleets, the majority of samples are collected in GA and FL (Tables 4 and 5).

Changes from Previous SEDARs

From SEDAR 73, nominal length compositions and their associated sample sizes are not available. Sample sizes for SEDAR 73 weighted length compositions are available, however, strata where the sample sizes do not meet the minimum threshold of 30 fish were excluded. A comparison of weighted length sample size to nominal length sample size would not be equivalent. The sample sizes for S41 nominal length compositions are available and were used to compare to SEDAR 90 nominal length composition sample sizes. Sample sizes for SEDAR 90 are generally larger, especially for later years included in SEDAR 41 (Table 5). Improvements in data provision, facilitated by the life history template, allowed unique records (n=25,344) in the age data to be added to the length-only data for inclusion in the length compositions.

Sample sizes for SEDAR 90 nominal age compositions are typically larger than the sample sizes for SEDAR 73 age compositions (Table 6). Similar to the differences in the number of length samples available, this is also driven by improvements to the data facilitated by the life history template. More information on how representative the samples are of the fishery is included with the life history template through the Random, Bias, and Sampling_Method fields. This additional information led the age data compiler to retain additional age samples for SEDAR 90 that were previously excluded due to lack of information about the sampling program and design. While sample sizes for age compositions are available for SEDAR 73, nominal age compositions are not available. Comparisons for weighted length and weighted age compositions between SEDAR 73 and SEDAR 90 will be provided when this document is appended to include weighted SEDAR 90 compositions.

Length-Length Conversions

For SEDAR 90 maximum total length (Max TL) is the length type used in length composition analyses. The following length-length conversions that were developed in SEDAR 41 were applied in SEDAR 90.

Fork Length (FL) to Max TL: *Max TL = 2.22 + (1.07 * FL)*

Standard Length (SL) to Max TL: $Max\ TL = 22.09 + (1.22 * SL)$

Natural Total Length (Nat TL) to Max Total Length: $Max\ TL = 4.62 + (1.02 * NatTL)$

Nominal Length Compositions

Fish were assigned to 3 cm bins with bins ranging from 21 cm - 99 cm. The label represents the midpoint of the bin. The 21 and 99 cm bins are both aggregate bins and the 21 cm bin contains all fish ≤ 22 cm and the 99 cm bin contains all fish ≥ 98 cm. It is recommended to exclude strata where the sample size is less than 30 fish. Comparisons of the nominal length compositions for the GR and HB fleets for SEDAR 90 are presented in Figure 2. In the early 2000's, the two fleets have very similar length distributions. In more recent years, the GR fleet skews larger than the HB fleet.

Comparison of Length and Age Data Length Distributions

Figures 3 and 4 compare the length distributions for samples included in the length compositions and the lengths from samples included in age compositions for the GR and HB fleets, respectively. For both fleets, the length distribution between the length and age samples are typically very similar. The lengths used in the length composition for the HB fleet were skewed slightly larger than the lengths from the age data for a few years.

Nominal Age Compositions

Red Snapper ages ranged from 1-54 years old, with the majority of fish being aged to less than 9 years old. The age bins range from 1-13 years with the 13 year bin being a plus group for all fish aged 13-54 years old. It is recommended to exclude strata where sample size was less than 10 fish. Comparisons fo the nominal length compositions for the GR and HB fleets for SEDAR 90 are presented in Figure 5. In the more recent years, the GR fleets tends to skew older than the HB fleet.

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Tables

Table 1. Total number fish (nfish) and trips (ntrip) where a length (len) and age samples were collected by each sampling program.

Sampling Program	nfish len	ntrip age	nfish len	nfish age
APAIS Observer	125	55	0	0
ECRS	1,473	612	0	0
EFL RS	11,537	3,826	1,643	353
FINOBS MRFSS HEADBOAT	69	30	68	30
FMRI	0	0	68	23
FWRI OBS	33	13	0	0
FWRI OBS AT SEA SAMPLING	38	8	38	8
FWRI OBS EC MARFIN	2	1	0	0
FWRI OBS EFL RS	38	8	27	4
GADNR 2009	679	95	619	91
GADNR mini	2,085	544	1,060	176
MARFIN	1,747	394	922	164
MARMAP RFS	550	1	459	1
MRFSS	0	0	59	16
MRIP	3,516	1,261	0	0
NCDMF	566	154	474	112
RECFIN	767	218	703	195
RECFIN ACCSP	0	0	1	1
RECFIN ACFCMA	3	2	3	2
RECFIN EFL RS	5,797	1,187	3,716	586
RECFIN SEFL CRP	37	7	37	7
SRFS	60	28	0	0
SRHS	16,070	4,849	5,646	1,748
State Finfish Survey	85	34	0	0
TIP	1,358	312	1,355	311
VOL FL RS	153	36	117	27

Table 2. Annual number of fish sampled by length from each sampling program.

Year	APAIS Observer	ECRS	EFL RS	FINOBS MRFSS HBT	FWRI OBS	FWRI OBS AT SEA SAMPLING	FWRI OBS EC MARFIN	FWRI OBS EFL RS	GADNR 2009	GADNR mini	MARFIN	MARMAP RFS
1972	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
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

Year	APAIS Observer	ECRS	EFL RS	FINOBS MRFSS HBT	FWRI OBS	FWRI OBS AT SEA SAMPLING	FWRI OBS EC MARFIN	FWRI OBS EFL RS	GADNR 2009	GADNR mini	MARFIN	MARMAP RFS
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	88
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	7	0	0	0	0	0	0	0	0	0	0	0
2006	7	0	0	21	0	0	0	0	0	0	0	0
2007	4	0	0	0	0	0	0	0	0	0	0	0
2008	29	0	0	0	0	0	0	0	0	0	0	0
2009	51	0	0	48	0	0	0	0	679	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	4	426	378	0	11	0	0	1	0	65	0	3
2013	4	621	572	0	9	6	0	37	0	69	0	16
2014	3	155	1,522	0	2	32	2	0	0	258	0	70
2015	0	0	0	0	4	0	0	0	0	0	0	0
2016	1	0	0	0	0	0	0	0	0	0	0	0

Year	APAIS Observer	ECRS	EFL RS	FINOBS MRFSS HBT	FWRI OBS	FWRI OBS AT SEA SAMPLING	FWRI OBS EC MARFIN	FWRI OBS EFL RS	GADNR 2009	GADNR mini	MARFIN	MARMAP RFS
2017	0	23	432	0	1	0	0	0	0	110	299	48
2018	0	59	1,388	0	0	0	0	0	0	362	585	90
2019	8	25	1,277	0	0	0	0	0	0	426	863	65
2020	0	95	679	0	1	0	0	0	0	372	0	77
2021	0	38	1,964	0	0	0	0	0	0	142	0	13
2022	0	14	1,181	0	1	0	0	0	0	20	0	21
2023	7	4	1,411	0	1	0	0	0	0	166	0	59
2024	0	13	733	0	3	0	0	0	0	95	0	0

Table 2 continued. Annual number of fish sampled by length from each sampling program.

Year	MRIP	NCDMF	RECFIN	RECFIN ACFCMA	RECFIN EFL RS	RECFIN SEFL CRP	SRFS	SRHS	State Finfish Survey	TIP	VOL EFL RS
1972	0	0	0	0	0	0	0	47	0	0	0
1973	0	0	0	0	0	0	0	31	0	0	0
1974	0	0	0	0	0	0	0	94	0	0	0
1975	0	0	0	0	0	0	0	154	0	0	0
1976	0	0	0	0	0	0	0	497	0	0	0
1977	0	0	0	0	0	0	0	718	0	0	0
1978	0	0	0	0	0	0	0	740	0	0	0
1979	0	0	0	0	0	0	0	245	0	0	0
1980	0	0	0	0	0	0	0	258	0	0	0
1981	27	0	0	0	0	0	0	672	0	0	0
1982	27	0	0	0	0	0	0	457	0	0	0
1983	23	0	0	0	0	0	0	1,006	0	0	0
1984	75	0	0	0	0	0	0	1,320	0	0	0
1985	41	0	0	0	0	0	0	1,190	0	0	0
1986	227	0	0	0	0	0	0	435	0	0	0
1987	69	0	0	0	0	0	0	316	0	0	0
1988	79	0	0	0	0	0	0	206	0	0	0
1989	69	0	0	0	0	0	0	374	1	0	0
1990	19	0	0	0	0	0	0	367	0	0	0
1991	21	0	0	0	0	0	0	152	0	0	0
1992	32	0	0	0	0	0	0	73	7	0	0
1993	30	0	0	0	0	0	0	203	2	1	0
1994	44	0	0	0	0	0	0	524	0	10	0
1995	34	0	0	0	0	0	0	147	0	0	0

Year	MRIP	NCDMF	RECFIN	RECFIN ACFCMA	RECFIN EFL RS	RECFIN SEFL CRP	SRFS	SRHS	State Finfish Survey	TIP	VOL EFL RS
1996	21	0	0	0	0	0	0	81	0	0	0
1997	32	0	0	0	0	0	0	68	0	0	0
1998	34	0	0	0	0	0	0	149	0	0	0
1999	140	0	0	0	0	0	0	160	22	0	0
2000	92	0	0	0	0	0	0	123	17	2	0
2001	120	0	0	0	0	0	0	254	4	45	0
2002	233	0	31	0	0	0	0	361	15	346	0
2003	165	0	67	0	0	0	0	328	6	388	0
2004	150	0	36	0	0	0	0	305	0	312	0
2005	63	0	173	0	0	0	0	194	2	254	0
2006	76	0	296	0	0	0	0	170	0	0	0
2007	56	0	66	0	0	0	0	167	0	0	0
2008	184	0	3	0	0	0	0	456	2	0	0
2009	203	5	39	3	688	37	0	767	4	0	0
2010	1	0	0	0	0	0	0	4	0	0	0
2011	0	0	1	0	0	0	0	1	0	0	0
2012	51	47	7	0	1,716	0	0	127	3	0	40
2013	16	6	19	0	866	0	0	174	0	0	58
2014	203	67	17	0	2,453	0	0	290	0	0	55
2015	0	0	0	0	0	0	0	64	0	0	0
2016	0	0	0	0	0	0	0	20	0	0	0
2017	81	31	5	0	0	0	0	248	0	0	0
2018	249	57	7	0	0	0	0	524	0	0	0
2019	67	30	0	0	0	0	0	280	0	0	0
2020	133	138	0	0	70	0	0	0	0	0	0

Year	MRIP	NCDMF	RECFIN	RECFIN ACFCMA	RECFIN EFL RS	RECFIN SEFL CRP	SRFS	SRHS	State Finfish Survey	TIP	VOL EFL RS
2021	94	69	0	0	4	0	37	0	0	0	0
2022	55	3	0	0	0	0	13	108	0	0	0
2023	141	113	0	0	0	0	4	197	0	0	0
2024	39	0	0	0	0	0	6	224	0	0	0

Table 3. Annual number of age samples collected by each sampling program.

Year	EFL RS	FIN OBS MRFSS HBT	FMRI	FWRI OBS AT SEA SAMPLING	FWRI OBS EFL RS	GADNR 2009	GADNR mini	MARFIN	MARMAP RFS
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	88
2001	0	0	28	0	0	0	0	0	0
2002	0	0	40	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	21	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	47	0	0	0	619	0	0	0
2010	0	0	0	0	0	0	0	0	0

Year	EFL RS	FIN OBS MRFSS HBT	FMRI	FWRI OBS AT SEA SAMPLING	FWRI OBS EFL RS	GADNR 2009	GADNR mini	MARFIN	MARMAP RFS
2011	0	0	0	0	0	0	0	0	0
2012	1	0	0	0	0	0	41	0	3
2013	1	0	0	6	27	0	31	0	16
2014	23	0	0	32	0	0	161	0	44
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0
2017	33	0	0	0	0	0	65	189	38
2018	304	0	0	0	0	0	217	327	88
2019	132	0	0	0	0	0	168	406	50
2020	132	0	0	0	0	0	225	0	58
2021	475	0	0	0	0	0	58	0	12
2022	181	0	0	0	0	0	10	0	21
2023	271	0	0	0	0	0	69	0	41
2024	90	0	0	0	0	0	15	0	0

Table 3 continued. Annual number of age samples collected by each sampling program.

Year	MRFSS	NCDMF	RECFIN	RECFIN ACCSP	RECFIN ACFCMA	RECFIN EFL RS	RECFIN SEFL CRP	SRHS	TIP	VOL EFL RS
1977	0	0	0	0	0	0	0	72	0	0
1978	0	0	0	0	0	0	0	277	0	0
1979	0	0	0	0	0	0	0	47	0	0
1980	0	0	0	0	0	0	0	93	0	0
1981	0	0	0	0	0	0	0	372	0	0
1982	0	0	0	0	0	0	0	134	0	0
1983	0	0	0	0	0	0	0	754	0	0
1984	0	0	0	0	0	0	0	614	0	0
1985	0	0	0	0	0	0	0	511	0	0
1986	0	0	0	0	0	0	0	190	0	0
1987	0	0	0	0	0	0	0	103	0	0
1988	0	0	0	0	0	0	0	23	0	0
1989	0	0	0	0	0	0	0	48	0	0
1990	0	0	0	0	0	0	0	35	0	0
1991	0	0	0	0	0	0	0	28	0	0
1992	0	0	0	0	0	0	0	12	0	0
1993	0	0	0	0	0	0	0	21	1	0
1994	0	0	0	0	0	0	0	16	10	0
1995	0	0	0	0	0	0	0	19	0	0
1996	0	0	0	0	0	0	0	36	0	0
1997	0	0	0	0	0	0	0	13	0	0
1998	0	0	0	0	0	0	0	7	0	0
2000	0	0	0	0	0	0	0	2	2	0
2001	0	0	0	0	0	0	0	2	45	0
2002	9	0	13	0	0	0	0	12	346	0
2003	20	0	63	0	0	0	0	15	388	0
2004	6	0	34	0	0	0	0	28	309	0
2005	1	0	164	0	0	0	0	28	254	0
2006	1	0	287	0	0	0	0	33	0	0
2007	1	0	64	0	0	0	0	47	0	0
2008	0	0	2	1	0	0	0	156	0	0
2009	9	0	37	0	3	670	37	530	0	0
2010	0	0	0	0	0	0	0	2	0	0
2011	0	0	1	0	0	0	0	0	0	0
2012	0	48	0	0	0	1,162	0	103	0	33

Year	MRFSS	NCDMF	RECFIN	RECFIN ACCSP	RECFIN ACFCMA	RECFIN EFL RS	RECFIN SEFL CRP	SRHS	TIP	VOL EFL RS
2013	0	3	9	0	0	451	0	154	0	31
2014	12	58	17	0	0	1,399	0	204	0	53
2015	0	0	0	0	0	0	0	63	0	0
2016	0	0	0	0	0	0	0	21	0	0
2017	0	23	5	0	0	0	0	171	0	0
2018	0	45	7	0	0	0	0	210	0	0
2019	0	27	0	0	0	0	0	114	0	0
2020	0	123	0	0	0	30	0	0	0	0
2021	0	54	0	0	0	4	0	0	0	0
2022	0	3	0	0	0	0	0	48	0	0
2023	0	90	0	0	0	0	0	120	0	0
2024	0	0	0	0	0	0	0	158	0	0

Table 4: Number of fish (nfish) and trips (ntrip) sampled for length from the gen rec (GR) and headboat (HB) fleet by potential subregions used for weighted length compositions. Sample sizes in red do not meet the recommended threshold of either 30 fish or 10 trips per stratum.

`Year	nfish GR NCSC	nfish GR GAFL	nfish HB NCSC	nfish HB GAFL	ntrip GR NCSC	ntrip GR GAFL	ntrip HB NCSC	ntrip HB GAFL
1972	0	0	47	0	0	0	29	0
1973	0	0	31	0	0	0	25	0
1974	0	0	94	0	0	0	51	0
1975	0	0	154	0	0	0	74	0
1976	0	0	194	303	0	0	72	45
1977	0	0	141	577	0	0	72	125
1978	0	0	94	646	0	0	47	161
1979	0	0	15	230	0	0	11	80
1980	0	0	24	234	0	0	19	73
1981	0	27	20	652	0	11	16	183
1982	0	27	36	421	0	9	21	133
1983	5	18	77	929	2	6	50	203
1984	8	67	151	1,169	3	12	85	229
1985	1	40	220	970	1	15	81	217
1986	2	225	81	354	2	82	51	139
1987	39	30	103	213	11	10	58	105
1988	30	49	107	99	14	18	66	52
1989	20	50	103	271	14	19	59	101
1990	17	2	74	293	6	2	36	101
1991	13	8	36	116	7	5	21	43
1992	14	25	45	28	7	12	32	17
1993	6	27	150	53	4	19	67	29
1994	14	40	429	95	11	18	41	30
1995	13	21	54	93	6	10	31	43
1996	10	11	26	55	5	11	19	29
1997	26	6	10	58	6	4	9	34
1998	12	22	36	113	4	14	22	56
1999	101	61	21	139	23	26	17	73
2000	128	71	16	107	11	34	11	59
2001	19	150	17	237	8	61	15	103
2002	31	594	20	341	16	137	15	142
2003	29	597	30	298	10	141	24	120

`Year	nfish GR NCSC	nfish GR GAFL	nfish HB NCSC	nfish HB GAFL	ntrip GR NCSC	ntrip GR GAFL	ntrip HB NCSC	ntrip HB GAFL
2004	7	484	15	297	7	135	12	104
2005	6	438	11	238	5	122	8	108
2006	18	235	14	303	8	67	12	138
2007	3	84	20	186	2	34	17	65
2008	14	173	29	458	8	56	16	86
2009	18	746	29	1,731	10	134	21	322
2010	1	0	0	4	1	0	0	1
2011	0	0	0	2	0	0	0	2
2012	76	2,151	48	604	19	613	17	50
2013	10	2,168	50	245	5	721	13	34
2014	85	4,337	146	561	21	1,270	21	67
2015	0	4	0	64	0	3	0	3
2016	0	0	1	20	0	0	1	1
2017	48	919	93	218	10	279	12	18
2018	79	2,588	110	544	22	833	14	36
2019	44	2,607	93	297	9	786	14	21
2020	136	1,214	111	104	41	388	8	9
2021	29	2,257	54	21	6	659	4	2
2022	7	1,277	21	111	1	414	3	10
2023	136	1,687	126	154	24	509	21	13
2024	0	871	3	239	0	320	1	16

Table 4: Number of fish (nfish) and trips (ntrip) sampled for age from the gen rec (GR) and headboat (HB) fleet in the South Atlantic. Sample sizes in red do not meet the recommended threshold of either 1- fish or 10 trips per stratum.

Year	nfish_GR	nfish_HB	ntrip_GR	ntrip_HB
1977	0	72	0	22
1978	0	277	0	82
1979	0	47	0	32
1980	0	93	0	36
1981	0	372	0	140
1982	0	134	0	56
1983	0	754	0	173
1984	0	614	0	176
1985	0	511	0	162
1986	0	190	0	99
1987	0	103	0	69
1988	0	23	0	21
1989	0	48	0	30
1990	0	35	0	23
1991	0	28	0	19
1992	0	12	0	10
1993	1	21	1	15
1994	10	16	2	10
1995	0	19	0	8
1996	0	36	0	26
1997	0	13	0	12
1998	0	7	0	6
2000	90	2	2	2
2001	73	2	25	2
2002	407	13	98	8
2003	471	15	101	7
2004	342	35	85	13
2005	375	72	95	30
2006	172	170	43	74
2007	30	82	12	40
2008	0	159	0	52
2009	481	1,471	80	301

Year	nfish_GR	nfish_HB	ntrip_GR	ntrip_HB
2010	0	2	0	1
2011	0	1	0	1
2012	778	613	140	61
2013	466	263	96	42
2014	1,385	618	265	85
2015	0	63	0	3
2016	0	21	0	3
2017	291	233	59	30
2018	858	340	180	45
2019	681	216	131	30
2020	356	212	84	16
2021	528	75	104	6
2022	192	71	39	12
2023	396	195	77	24
2024	87	176	21	17

Table 5. Number of fish (nfish) and trips (ntrip) sampled for length for SEDAR 41 and SEDAR 90 for the gen rec (GR) and headboat (HB) fleet.

Year	nfish S41 GR	nfish S90 GR	nfish S41 HB	nfish S90 HB	ntrip S41 GR	ntrip S90 GR	ntrip S41 HB	ntrip S90 HB
1972	0	0	48	47	0	0	30	29
1973	0	0	32	31	0	0	26	25
1974	0	0	95	94	0	0	52	51
1975	0	0	155	154	0	0	74	74
1976	0	0	497	497	0	0	117	117
1977	0	0	718	718	0	0	197	197
1978	0	0	740	740	0	0	208	208
1979	0	0	245	245	0	0	91	91
1980	0	0	258	258	0	0	92	92
1981	27	27	672	672	10	11	199	199
1982	28	27	457	457	10	9	154	154
1983	23	23	1,006	1,006	7	8	253	253
1984	75	75	1,321	1,320	15	15	314	314
1985	41	41	1,191	1,190	15	16	298	298
1986	227	227	435	435	83	84	190	190
1987	69	69	306	316	16	21	158	163
1988	82	79	204	206	27	32	116	118
1989	70	70	365	374	26	33	157	160
1990	19	19	367	367	7	8	137	137
1991	21	21	152	152	9	12	64	64
1992	39	39	73	73	13	19	49	49
1993	32	33	203	203	18	23	96	96
1994	44	54	120	524	25	29	57	71
1995	34	34	147	147	12	16	74	74
1996	21	21	78	81	11	16	46	48
1997	32	32	67	68	5	10	42	43
1998	34	34	149	149	17	18	78	78
1999	162	162	162	160	47	49	91	90
2000	109	199	123	123	43	45	70	70
2001	126	169	256	254	56	69	118	118
2002	248	625	361	361	62	153	157	157
2003	173	626	329	328	56	151	145	144
2004	157	491	303	312	63	142	112	116

Year	nfish S41 GR	nfish S90 GR	nfish S41 HB	nfish S90 HB	ntrip S41 GR	ntrip S90 GR	ntrip S41 HB	ntrip S90 HB
2005	78	444	195	249	35	127	95	116
2006	80	253	172	317	31	75	102	150
2007	63	87	170	206	26	36	69	82
2008	196	187	457	487	66	64	91	102
2009	223	762	766	1,760	59	144	186	343
2010	1	1	4	4	1	1	1	1
2011	0	0	1	2	0	0	1	2
2012	494	2,227	132	652	182	632	16	67
2013	647	2,178	177	295	256	726	31	47
2014	1,921	4,419	291	707	640	1,288	42	88
2015		4		64		3	3	3
2016		0		21		0	0	2
2017		967		311		289	24	30
2018		2,667		654		855	41	50
2019		2,651		390		795	23	35
2020		1,350		213		429		17
2021		2,286		75		665		6
2022		1,284		132		415		13
2023		1,820		280		533		34
2024		869		242		319		17

Table 6. Number of fish (nfish) and trips (ntrip) sampled for age in SEDAR 73 and SEDAR 90 for the gen rec (GR) and headboat (HR) fleets.

Year	nfish S73 GR	nfish S90 GR	nfish S73 HB	nfish S90 HB	ntrip S73 GR	ntrip S90 GR	ntrip S73 HB	ntrip S90 HB
1977	0	0	72	72	0	0	22	22
1978	0	0	275	277	0	0	80	82
1979	0	0	46	47	0	0	31	32
1980	0	0	86	93	0	0	30	36
1981	0	0	369	372	0	0	137	140
1982	0	0	131	134	0	0	55	56
1983	0	0	746	754	0	0	167	173
1984	0	0	614	614	0	0	176	176
1985	0	0	511	511	0	0	162	162
1986	0	0	190	190	0	0	99	99
1987	0	0	102	103	0	0	68	69
1988	0	0	20	23	0	0	18	21
1989	0	0	47	48	0	0	30	30
1990	0	0	36	35	0	0	24	23
1991	0	0	22	28	0	0	13	19
1992	0	0	10	12	0	0	8	10
1993	0	0	21	21	0	0	15	15
1994	0	10	10	16	0	2	6	10
1995	0	0	12	19	0	0	5	8
1996	0	0	35	36	0	0	25	26
1997	0	0	13	13	0	0	12	12
1998	0	0	0	7	0	0	0	6
1999	NA	0	NA	0	NA	0	NA	0
2000	0	90	0	2	0	2	0	2
2001	45	75	0	2	19	26	0	2
2002	253	415	0	13	79	100	0	8
2003	324	472	14	15	87	102	6	7
2004	36	346	32	35	17	87	10	13
2005	241	377	69	72	59	96	28	30
2006	181	172	165	170	45	43	69	74
2007	32	32	83	82	13	13	40	40
2008	0	0	160	159	0	0	52	52
2009	539	564	1459	1,471	90	92	293	301

Year	nfish S73 GR	nfish S90 GR	nfish S73 HB	nfish S90 HB	ntrip S73 GR	ntrip S90 GR	ntrip S73 HB	ntrip S90 HB
2010	0	0	0	2	0	0	0	1
2011	0	0	0	1	0	0	0	1
2012	1649	1,751	602	613	419	452	54	61
2013	1445	1,531	242	263	441	467	39	42
2014	3323	4,078	359	618	1012	1,175	63	85
2015	0	0	63	63	0	0	3	3
2016	0	0	21	21	0	0	3	3
2017	753	845	202	233	224	243	28	30
2018	2082	2,343	251	340	623	719	40	45
2019	2206	2,532	38	216	642	753	4	30
2020		1,117		212		352		16
2021		2,153		75		620		6
2022		1,212		71		386		12
2023		1,666		195		486		24
2024		801		176		281		17

Figures
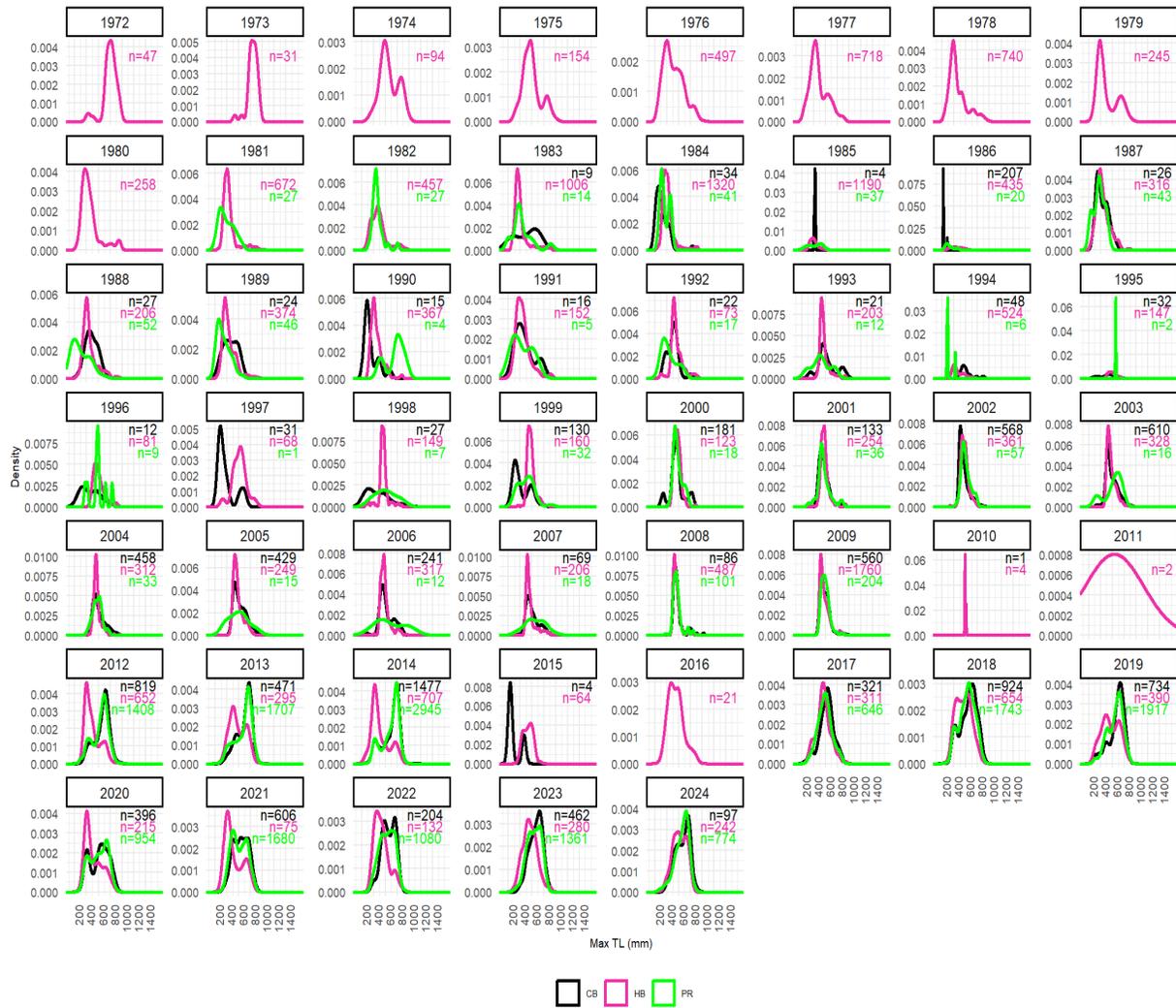
Figure 1. Annual nominal length distributions for the charter (CB), headboat (HB), and private (PR) modes. The number of fish (n) for each year and mode is provided in the top right corner of each panel.
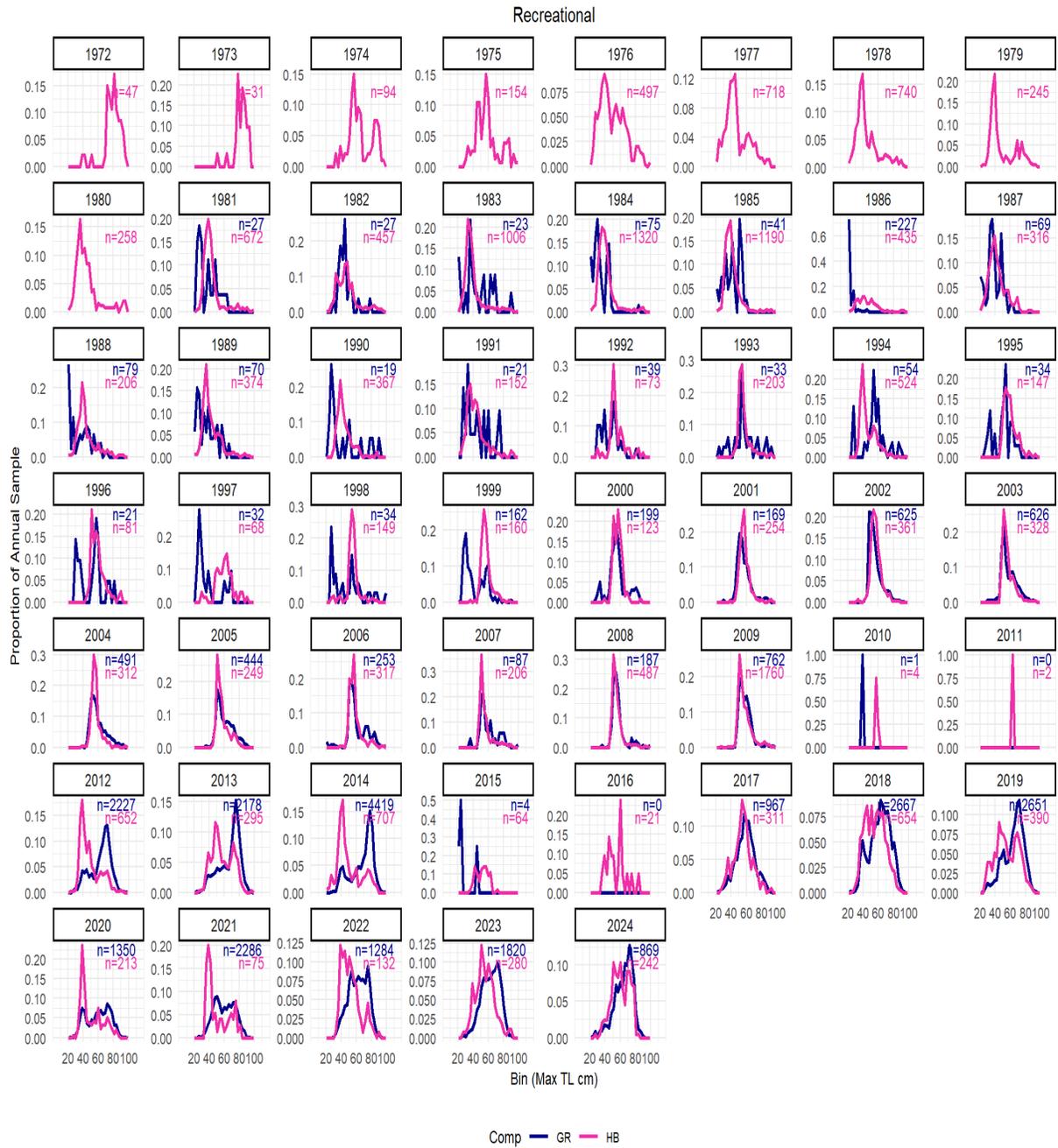
Figure 2. Annual nominal length distributions for the gen rec (GR) and headboat (HB) fleets. The number of fish (n) for each year and fleet is provided in the top right corner of each panel.
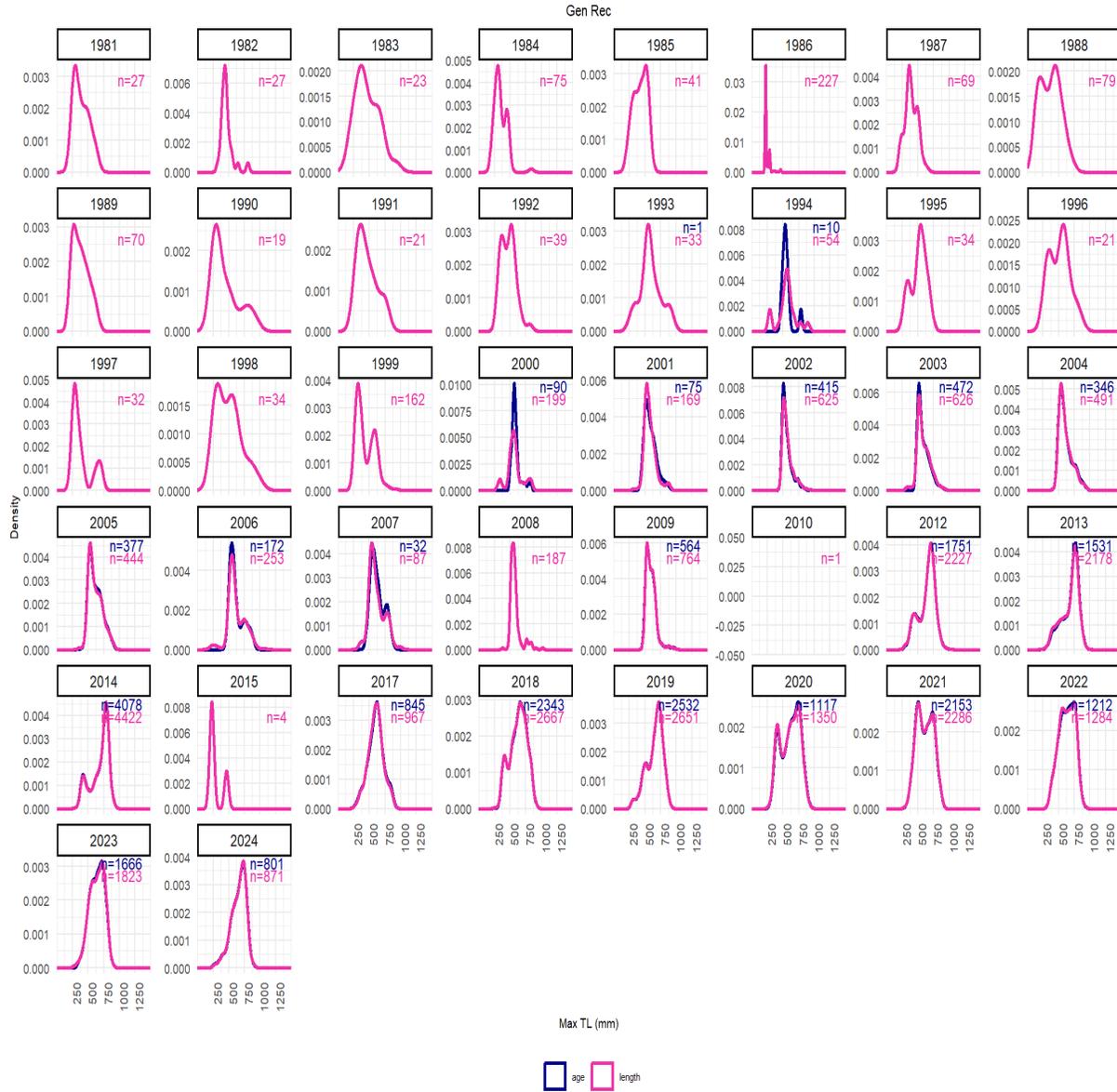
Figure 3. Comparison of the length distribution of samples included in the length compositions and the age compositions for the gen rec (GR) fleet. The number of fish (n) for each composition type is provided in the top right corner of each panel.
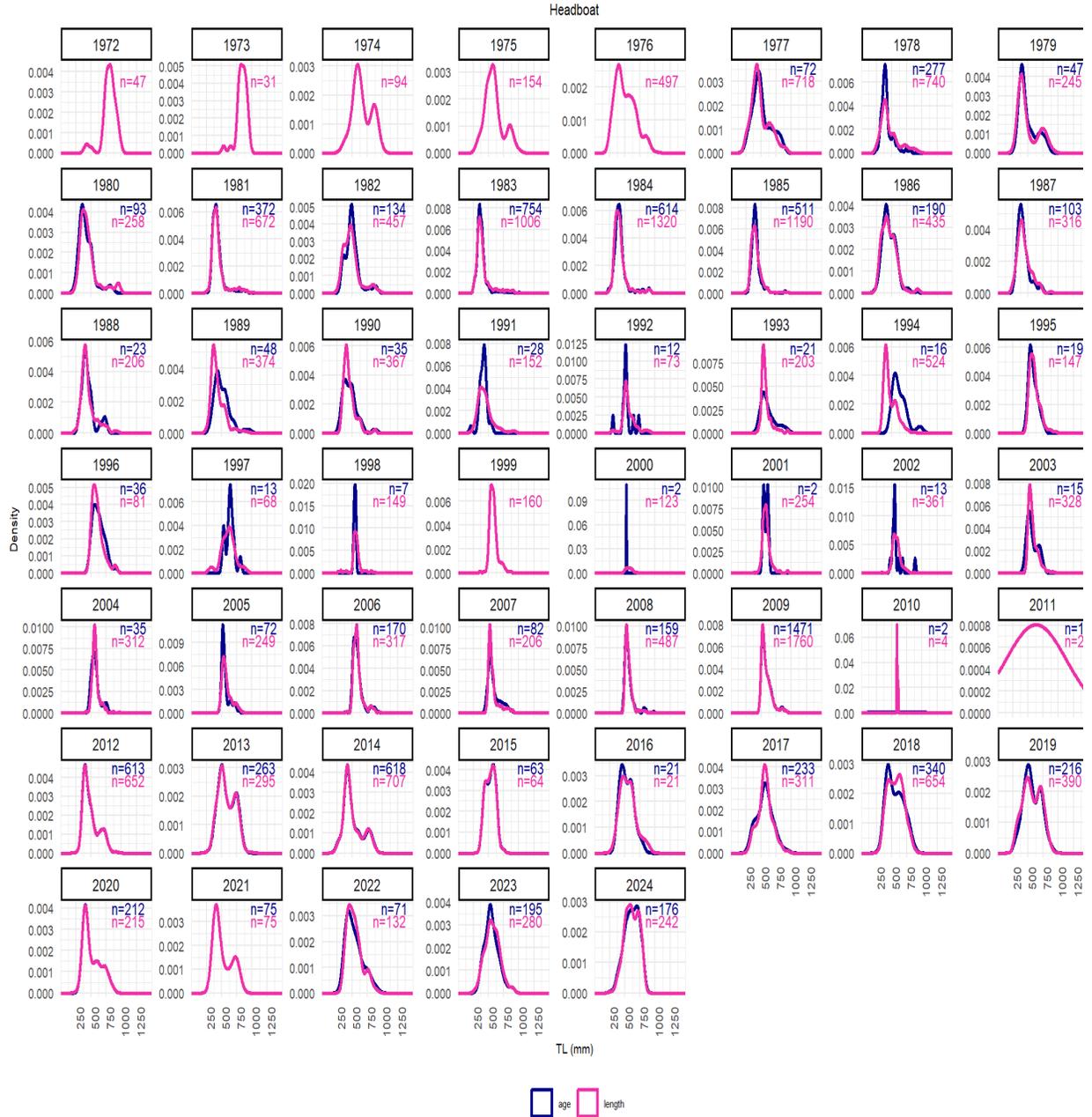
Figure 4. Comparison of the length distribution of samples included in the length compositions and the age compositions for the headboat (HB) fleet. The number of fish (n) for each composition type is provided in the top right corner of each panel.
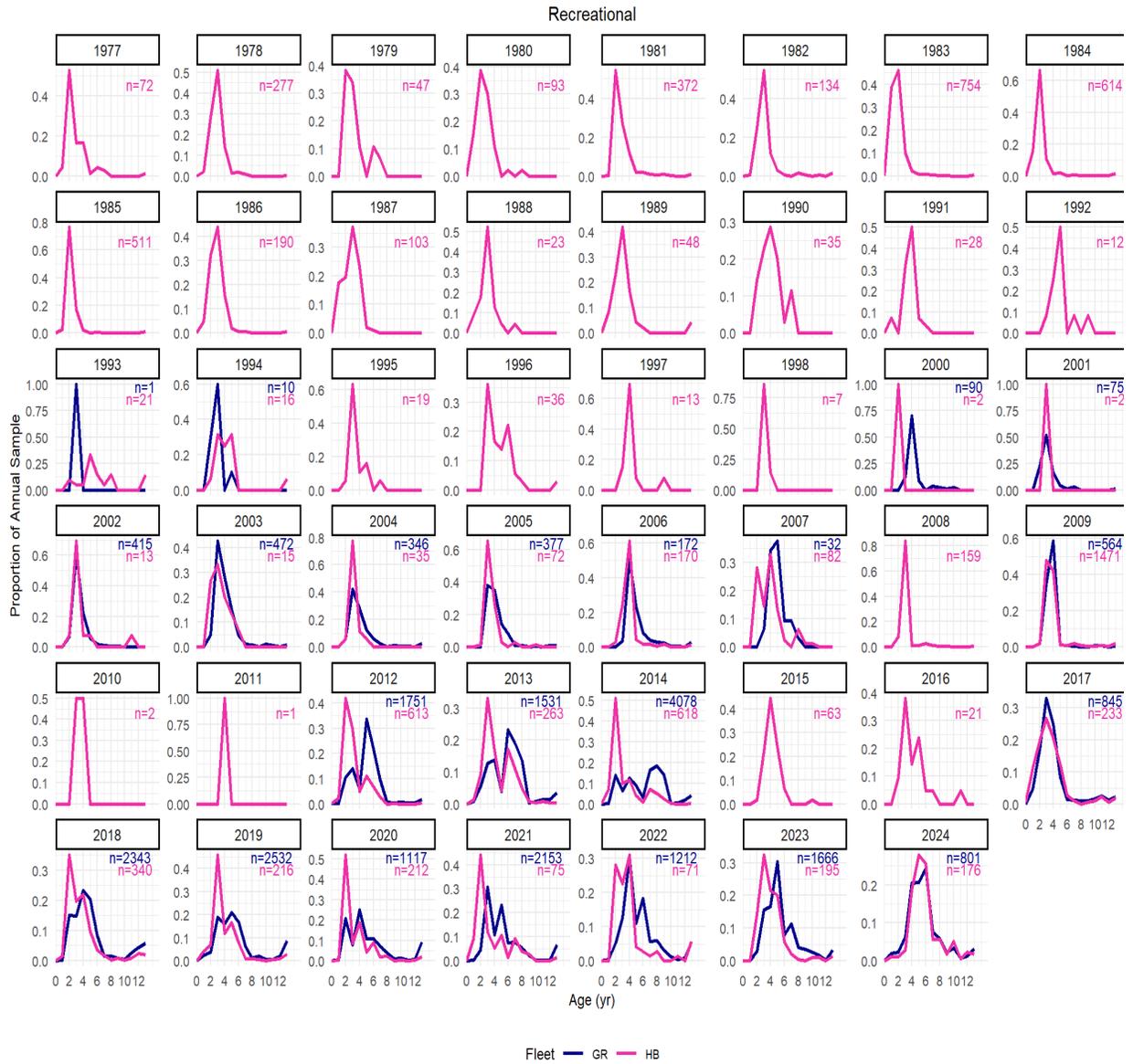
Figure 5. Annual age compositions for the gen rec (GR) and headboat (HB) fleets. The number of fish (n) for each fleet is provided in the top right corner of each panel.