

## **Age and length composition weighting for U.S. snowy grouper (*Epinephelus niveatus*)**

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# Age and length composition weighting for U.S. snowy grouper (*Epinephelus niveatus*)

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## **Introduction**

The SEDAR 36 data workshop developed raw length and age compositions for each of the fisheries where sufficient data were available. The fishery-dependent data collection for lengths and ages may be biased due to sampling protocols, state-specific sampling effort, or other non-random methods. The selection of fish from which to collect ageing structures may be biased because the selection process is rarely randomized. One technique to overcome bias in the length sampling is to weight samples by the associated landings at a spatial and temporal scale at which the bias is expected. Usually this is unknown and samples are weighted at the finest scale available without losing data (e.g. length samples with no associated landings). In this document we describe how the length data were weighted and how these weightings are extended to the age data. These methods have been used in previous SEDAR assessments and completed between the data and assessment workshops.

## **Data Description**

### **Commercial - general**

Biological sample data were obtained from the NMFS/SEFSC Trip Interview Program (TIP). Data were filtered to eliminate those records: 1) that included a size or effort bias, 2) where lengths were collected using a non-random method, 3) that were not from commercial trips, 4) that were selected by quota sampling, or 5) where the data were not collected shore-side. These data were further limited to those that could be assigned a year, gear, and state. Length samples were assigned a state based on landing location or sample location if there was no landing location assigned.

### **Commercial-Lengths**

The numbers of fish sampled are presented in Table 1.

All snowy grouper lengths were converted to TL in mm using the formula provided by the SEDAR 36 Life History Group and binned into one centimeter intervals (e.g. 25cm interval = 24.5cm to 25.4cm) The length data and landings data were divided into handlines and longlines. All other gears (other, pots and trawls) were filtered and not included in the analysis.

## Recreational Lengths

### *MRFSS/MRIP Biological Sampling*

The MRFSS/MRIP angler intercept survey includes the sampling of fish lengths from the harvested (landed, whole condition) catch. Up to 15 of each species landed per angler interviewed are measured to the nearest mm along a center line (defined as tip of snout to center of tail along a straight line, not curved over body). In those fish with a forked tail, this measure would typically be referred to as a fork length, and in those fish that do not have a forked tail it would typically be referred to as a total length with the exception of some fishes that have a single, or few, caudal fin rays that extend further. Weights are typically collected for the same fish measured. When time is constrained a weight may be collected without a length measurement.

### *Headboat Survey Biological Sampling*

Lengths were collected from 1972 to 2011 by headboat dockside samplers. From 1972 to 1975, only North Carolina and South Carolina were sampled whereas Georgia and northeast Florida were sampled beginning in 1976. The Southeast Region Headboat Survey conducted dockside sampling for the entire range of Atlantic waters along the southeast portion of the US from the NC-VA border through the Florida Keys beginning in 1978. Weights are typically collected for the same fish measured during dockside sampling.

Any existing weight measurements without an associated total length measurement were converted to total length using the conversion equation provided by Wyanski et al. (2000).

Annual numbers of snowy grouper measured for length and the percentage of estimated catch (number) that was sampled from the recreational fishery are reported by state in Table 2. In certain years and regions, the number of fish measured exceeded the estimated recreational landings. Due to Southeast

Regional Headboat Survey (SRHS) vessel confidentiality requirements Georgia and east Florida are grouped (GA/EFL).

### **Commercial Ages**

Age samples of snowy grouper came from 968 trips between 1998 and 2012. The lowest numbers of trips sampled were in 1995, 1996 and 2011 (longline) at one trip respectively. The highest number of trips sampled was in 2009 at 115. More handline trips were sampled (823 trips) than longline (145 trips). The number of commercial ages sampled for snowy grouper can be found by year, gear, and state in Table 3.

### **Recreational Ages**

Aging structures and other biological samples are not collected during MRFSS/MRIP assignments because of concerns over the introduction of bias to survey data collection. Biological samples (scales, otoliths, spines, stomachs and gonads) are collected by the SRHS and processed for aging, diet studies, and maturity studies. Aging structures provided from the charter boat and private boat modes were collected ad hoc by MRFSS/MRIP state subcontractors and SRHS port agents.

Annual numbers of snowy grouper sampled for age and the percentage of estimated catch (number) that was sampled from the recreational fishery are reported by state in Table 4.

### **Weighting methods**

#### **Commercial**

The commercial landings estimates for SEDAR 36 were developed at the year and state level. Therefore, the finest scale to weight the SEFSC-TIP length data was by year and state for each of the gear groupings (handline and longline). For each year, the state-specific length composition was multiplied by the proportion of landings from that state. The weighted state-specific length compositions were then combined and scaled to sum to one.

#### **Recreational**

The SRHS landings estimates for SEDAR 4 from the SRHS were provided for the entire South Atlantic during 1972-1980. Because these landings were not provided by state the 1972-1980 length data was not weighted.

The recreational landings estimates for SEDAR 36 were developed at the year and state level from 1981-2012 in order to consolidate the MRFSS/MRIP and SRHS landings estimates. Therefore, the finest scale to weight the length data was by year and state during 1981-2012. However, the MRFSS/MRIP data showed high numbers of landings for a limited number of samples. Weighting the length composition by landings would inflate the proportion of those length samples. Therefore a combined nominal recreational length composition was provided for the entire time series.

### **Ages (Commercial)**

The fishery-dependent age composition estimates were weighted to correct biases in age composition due to non-representative sampling. This weighting method was adapted from a technique to reduce bias associated with non-representative age sampling to produce unbiased growth curves (Chih, 2009) and has been previously used in SEDAR assessments. Lengths are recorded for each fish sampled for age. A reweighting value ( $RW$ ) associated with the year ( $j$ ) and length interval ( $i$ ) of the age sample was assigned to each age sample by fishery as in the formula:

$$RW_{ij} = \frac{LC_{ij}}{OL_{ij}/TO_j}$$

where  $LC_{ij}$  is the weighted length composition value associated with the year  $j$  and length interval  $i$  of each aged fish,  $OL_{ij}$  is the number of aged samples in length interval  $i$  and year  $j$ , and  $TO_j$  is the total number of aged samples in year  $j$ . This weighting corrects for a potential sampling bias of age samples relative to length samples (Chih, 2009). The numerator in this method differs slightly from the method used by Chih in that the length composition is weighted by the landings.

### **Recreational**

Age samples were collected during 1980-1987, 1989-1997, and 2002-2012. Of those, 9.5% were collected in 1981, 38.9% were collected in 2003 (91.8% of those were taken from North Carolina), and 13.0% were collected in 2004. Seven age samples taken from Virginia in 2007 were removed from the age composition

due to a lack of landings and length samples from Virginia. The age data from the recreational fishery were insufficient to analyze using traditional methods. The length composition of the aged fish was compared to the length composition to investigate sampling bias. Due to limited sample size the nominal age composition was provided.

## Results

### Commercial Lengths

The commercial handline length compositions showed similar sized fish among regions (Figure 1). The weighting of the length composition for the handline fishery had little influence (Figure 2).

The commercial longline length compositions were very similar when compared across regions (Figure 3). Therefore the weighting of the length composition for the longline fishery had little influence (Figure 4).

The commercial handline fishery captures smaller fish than longline fishery (Figure 5).

### Recreational Lengths

The recreational length compositions by survey (MRFSS/MRIP and SRHS) by state are shown in Figure 6. The nominal length composition for the MRFSS/MRIP and SRHS are shown in Figure 7. The nominal length composition for the combined recreational fishery is shown in Figure 8.

## Ages

### Commercial

One way to investigate sampling bias related to the collection of age samples is to compare the length composition of the aged fish to the length composition. For snowy grouper, the length composition of the aged fish agree well with the length composition for years where more than approximately twenty trips were sampled for handline and longline (Figure 9 & Figure 10). The weighted age compositions are similar to the unweighted ages for the handline commercial age frequency (Figure 11). The weighted age compositions are very similar to the nominal age compositions for the longline fishery (Figure 12).

### Recreational

For snowy grouper, the length composition of the aged fish does not agree with the nominal length composition (Figure 13). Because the recreational age data were insufficient to analyze using traditional methods the data were combined to create one recreational age composition (Figure 14).

### **Discussion**

There is minimal influence when weighting the commercial length or age composition for snowy grouper. However, the weighted compositions are recommended for use as a matter of protocol and to remove whatever minimal bias may be present.

The commercial longline weighted length composition for input into the model is given in Table 5. The commercial handline weighted length composition for input into the model is given in Table 6.

Several factors were considered in determining the maximum age for the population in the model, including the growth, maturity, and fecundity. Based on the composition data, a reasonable plus group for fitting these data appears to be 14 years of age. The weighted age composition for commercial longline is shown in Table 7. The weighted age composition for commercial handline is shown in Table 8.

The combined recreational nominal length composition is provided in Table 9. The nominal age composition for recreational snowy grouper is provided in Table 10. The discrepancy between the nominal length distribution and the length distribution of recreational age samples can be attributed to the low number of age samples and limited geographical and temporal distributions.

**Tables**

Table 1. Number of fish sampled for lengths for snowy grouper by year and gear for the commercial handline and longline gears.

Year	Handline				Longline			
	FL	GA	NC	SC	FL	GA	NC	SC
1983			95			26	368	745
1984	26	489	1366	217	345	13	88	619
1985	244	167	2952	282	9		9	1268
1986	184	179	1183	79	22		329	214
1987	87	377	669	262			236	225
1988	114	100	505	76			226	115
1989	39	194	1024	22	71		407	236
1990	183		1229	265	28	14	677	198
1991	419	173	895	172	840	15	644	201
1992	1666	190	900	241	3284	61	963	360
1993	1150	139	844	206	149	36	244	378
1994	535	86	1160	141	1204	46	135	370
1995	2607	50	1646	241	369			388
1996	880	60	658	545	499		5	851
1997	393	44	332	322	246			226
1998	415	5	711	591	290		330	657
1999	628	15	1161	597	281		156	425
2000	395	76	1455	335	310		209	385
2001	306	19	990	470	325			632
2002	162	30	833	255	119			253
2003	70	95	1133	223	32		161	257
2004	90	12	1900	129	40			66
2005	88	7	1155	109	95		32	107
2006	104		1485	137	36			4
2007	158		826	198	27		6	28
2008	42		431	168	18		70	17
2009	28		304	268	23		20	20
2010	48		643	174	3		6	
2011	32		416	210	35		17	
2012	140		578	208				

**Table 2.** Number of snowy grouper sampled for lengths and percentage of the estimated catch in numbers that was sampled by state for the recreational fishery.

Year	Lengths (N)				Percentage fish sampled for length <sup>1</sup>					
	FLE/GA	SC	NC	DE	Atlantic	FLE/GA	SC	NC	DE	Atlantic
1972	-	7	63	-	70					6.76
1973	-	6	38	-	44					6.92
1974	-	156	86	-	242					13.50
1975	-	152	44	-	196					18.86
1976	-	98	135	-	233					9.37
1977	-	19	103	-	122					10.54
1978	4	36	11	-	51					6.40
1979	-	24	24	-	48					4.20
1980	10	39	5	-	54					2.39
1981	50	14	21	-	85	0.06	1.32	9.77		0.10
1982	3	18	3	-	24	0.73	0.38	2.05		0.45
1983	9	53	13	-	75	0.12	2.04	18.06		0.75
1984	9	32	2	-	43	0.47	11.03	1.29		1.82
1985	16	25	31	-	72	6.90	2.95	110.71		6.50
1986	6	49	22	-	77	1.84	2.47	5.98		2.88
1987	12	18	6	-	36	9.02	1.85	0.36		1.30
1988	2	37	8	-	47	0.08	4.36	3.00		1.26
1989	27	22	2	-	51	11.74	3.28	0.92		4.56
1990	1	2	4	-	7	0.61	0.44	1.18		0.73
1991	-	1	5	-	6	-	0.37	1.78		0.77
1992	1	-	1	-	2	0.10	-	0.06		0.07
1993	4	4	2	-	10	0.04	2.07	2.74		0.10
1994	2	8	7	-	17	0.37	2.60	12.50		1.87
1995	11	6	4	-	21	0.11	2.69	5.71		0.21
1996	-	96	12	-	108	-	19.63	1.44		7.27
1997	16	114	14	-	144	0.12	45.24	0.20		0.71
1998	6	58	5	-	69	1.36	305.26	6.17		12.73
1999	34	-	-	-	34	0.45	-	-		0.40
2000	14	-	1	-	15	1.82	-	0.05		0.55
2001	21	-	28	-	49	0.64	-	0.22		0.30
2002	5	-	19	-	24	2.06	-	0.45		0.52
2003	21	1	8	-	30	1.51	3.57	0.21		0.58
2004	45	-	8	-	53	0.48	-	0.21		0.40
2005	14	-	16	-	30	0.10	-	0.23		0.14
2006	33	-	10	-	43	0.19	-	0.71		0.23
2007	16	1	39	-	56	0.51	1.11	2.77		1.21
2008	7	-	28	-	35	1.51	-	1.34		1.37
2009	13	-	40	-	53	0.30	-	3.31		0.95
2010	10	-	76	-	86	0.38	-	2.31		1.46
2011	2	-	1	-	3	2.78	-	1.33		2.04
2012	8	-	12	-	20	0.05	-	2.22	-	0.12

<sup>1</sup>Note: Landings were not available by state during 1972-1980.

Table 3. Number of fish sampled for age for snowy grouper by year and gear for the commercial handline and longline gears.

Year	Handline			Longline		
	FL	NC	SC	FL	NC	SC
1992		38				
1993	3					
1994						
1995	1					
1996	5					
1997	105					
1998	72			62		
1999	64			64		
2000	87			109		
2001	70			104		
2002	60			117		
2003	30	53		69		
2004	66	149		20	66	
2005	95	277	9	9		32
2006	90	16	83	80		81
2007	100	736	127	31		2
2008	12	407	119	37	3	13
2009	46	310	99	2	47	2
2010		565	170		18	17
2011	5	399	195		1	
2012	35	597	202	29	15	

Table 4. Number of snowy grouper sampled for age and percentage of the estimated catch in numbers that was sampled by state for the recreational fishery.

Year	Fish (N)				Percentage fish sampled for age			
	FLE/GA	SC	NC	VA <sup>1</sup>	FLE/GA	SC	NC	VA
1972	-	-	-	-	-	-	-	-
1973	-	-	-	-	-	-	-	-
1974	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-
1980	6	16	-	-	-	-	-	-
1981	38	7	-	-	0.05	0.66	-	-
1982	1	-	-	-	0.24	-	-	-
1983	1	17	-	-	0.01	0.66	-	-
1984	5	6	-	-	0.26	2.07	-	-
1985	2	4	-	-	0.86	0.47	-	-
1986	3	15	-	-	0.92	0.76	-	-
1987	-	-	1	-	-	-	0.06	-
1988	-	-	-	-	-	-	-	-
1989	-	15	-	-	-	2.24	-	-
1990	-	1	3	-	-	0.22	0.88	-
1991	-	1	1	-	-	0.37	0.36	-
1992	-	-	1	-	-	-	0.06	-
1993	-	2	2	-	-	1.04	2.74	-
1994	-	-	3	-	-	-	5.36	-
1995	-	-	1	-	-	-	1.43	-
1996	-	-	7	-	-	-	0.84	-
1997	1	-	1	-	0.01	-	0.01	-
1998	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-
2002	4	-	-	-	1.65	-	-	-
2003	15	-	170	-	1.08	-	4.48	-
2004	59	-	3	-	0.63	-	0.08	-
2005	4	-	1	-	0.03	-	0.01	-
2006	18	-	1	-	0.10	-	0.07	-
2007	5	1	1	7	0.16	1.11	0.07	700.00
2008	13	-	-	-	2.81	-	-	-
2009	8	-	-	-	0.18	-	-	-
2010	8	-	-	-	0.31	-	-	-
2011	2	-	-	-	2.78	-	-	-
2012	-	-	2	-	-	-	0.37	-

<sup>1</sup>Note: VA ages were removed from the age composition due to lack of samples and landings from VA.

Table 5. Weighted length composition (TL in cm) for commercial longline snowy grouper.

year	n.fish	n.trips	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1984	1139	24	0.0000	0.0007	0.0000	0.0000	0.0000	0.0007	0.0000	0.0007	0.0014	0.0014	0.0028	0.0037	0.0021	0.0067	
1985	1065	28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019	0.0014	0.0014	0.0031	0.0031	0.0093	0.0096	0.0081	
1986	1286	19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0004	0.0017	0.0009	0.0009	0.0039	0.0035	0.0048	0.0074	0.0052
1987	565	14	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0000	0.0012	0.0000	0.0000	0.0012	0.0110	0.0058	0.0055	0.0113
1988	461	14	0.0000	0.0000	0.0000	0.0044	0.0000	0.0000	0.0000	0.0165	0.0087	0.0167	0.0128	0.0138	0.0296	0.0356	0.0303
1989	341	7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0008	0.0008	0.0000
1990	714	15	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0022	0.0000	0.0145	0.0085	0.0018	0.0056	0.0054	0.0038	0.0187
1991	917	22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0005	0.0010	0.0010	0.0041	0.0010	0.0041	0.0030	0.0061	0.0126
1992	1700	63	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0007	0.0025	0.0027	0.0029	0.0069
1993	4668	100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0009	0.0008	0.0020	0.0028	0.0026	0.0032	0.0081	0.0082
1994	807	41	0.0000	0.0000	0.0000	0.0013	0.0000	0.0012	0.0025	0.0050	0.0025	0.0108	0.0036	0.0073	0.0086	0.0123	0.0147
1995	1755	48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	0.0068	0.0004	0.0060	0.0066	0.0061	0.0071	0.0138
1996	757	18	0.0000	0.0000	0.0012	0.0012	0.0012	0.0000	0.0000	0.0049	0.0049	0.0037	0.0037	0.0037	0.0039	0.0114	0.0179
1997	1355	33	0.0000	0.0006	0.0000	0.0000	0.0000	0.0011	0.0006	0.0016	0.0020	0.0044	0.0056	0.0069	0.0070	0.0059	0.0090
1998	472	21	0.0000	0.0000	0.0000	0.0023	0.0000	0.0000	0.0059	0.0108	0.0139	0.0040	0.0042	0.0144	0.0085	0.0153	0.0193
1999	1277	29	0.0008	0.0000	0.0008	0.0008	0.0008	0.0017	0.0017	0.0017	0.0025	0.0098	0.0107	0.0193	0.0065	0.0108	
2000	862	32	0.0000	0.0000	0.0000	0.0014	0.0012	0.0000	0.0014	0.0000	0.0027	0.0032	0.0099	0.0057	0.0077	0.0111	0.0142
2001	904	28	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0025	0.0024	0.0037	0.0000	0.0037	0.0012	0.0025	0.0049	0.0036
2002	957	37	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002	0.0005	0.0005	0.0031	0.0000	0.0028	0.0031	0.0069	0.0110	0.0152
2003	372	29	0.0000	0.0000	0.0000	0.0063	0.0000	0.0063	0.0000	0.0000	0.0030	0.0073	0.0176	0.0130	0.0010	0.0040	0.0125
2004	450	19	0.0000	0.0000	0.0000	0.0029	0.0156	0.0009	0.0147	0.0000	0.0009	0.0009	0.0018	0.0147	0.0038	0.0185	0.0077
2005	106	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0148	0.0148	0.0000	0.0000
2006	234	23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0083
2007	40	11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2008	61	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2009	105	33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	63	19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2011	9	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	52	11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 5 (Continued).

year	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
1984	0.0035	0.0042	0.0085	0.0021	0.0051	0.0062	0.0072	0.0044	0.0072	0.0209	0.0145	0.0113	0.0106	0.0138	0.0039	0.0056	0.0051
1985	0.0112	0.0052	0.0142	0.0147	0.0122	0.0194	0.0160	0.0136	0.0161	0.0277	0.0197	0.0202	0.0180	0.0293	0.0229	0.0245	0.0235
1986	0.0070	0.0083	0.0136	0.0114	0.0136	0.0136	0.0131	0.0087	0.0153	0.0061	0.0114	0.0070	0.0083	0.0407	0.0083	0.0109	0.0114
1987	0.0122	0.0185	0.0235	0.0252	0.0232	0.0137	0.0214	0.0127	0.0187	0.0165	0.0517	0.0095	0.0125	0.0055	0.0112	0.0167	0.0147
1988	0.0238	0.0424	0.0208	0.0409	0.0232	0.0368	0.0603	0.0383	0.0349	0.0398	0.0383	0.0191	0.0305	0.0528	0.0269	0.0405	0.0211
1989	0.0016	0.0049	0.0016	0.0016	0.0033	0.0033	0.0025	0.0016	0.0041	0.0041	0.0128	0.0183	0.0316	0.0049	0.0191	0.0491	0.0450
1990	0.0072	0.0110	0.0084	0.0119	0.0133	0.0200	0.0288	0.0261	0.0225	0.0274	0.0301	0.0167	0.0198	0.0285	0.0263	0.0441	0.0220
1991	0.0142	0.0121	0.0066	0.0192	0.0137	0.0278	0.0314	0.0203	0.0466	0.0219	0.0254	0.0193	0.0294	0.0345	0.0370	0.0319	0.0248
1992	0.0063	0.0070	0.0078	0.0125	0.0099	0.0095	0.0096	0.0171	0.0210	0.0236	0.0250	0.0254	0.0268	0.0334	0.0240	0.0224	0.0241
1993	0.0094	0.0097	0.0147	0.0114	0.0202	0.0207	0.0220	0.0221	0.0241	0.0294	0.0276	0.0231	0.0306	0.0255	0.0271	0.0339	0.0368
1994	0.0110	0.0171	0.0111	0.0224	0.0147	0.0209	0.0235	0.0274	0.0225	0.0272	0.0245	0.0211	0.0297	0.0298	0.0308	0.0258	0.0233
1995	0.0226	0.0251	0.0312	0.0271	0.0417	0.0294	0.0516	0.0516	0.0349	0.0422	0.0473	0.0438	0.0455	0.0404	0.0297	0.0255	0.0330
1996	0.0210	0.0269	0.0399	0.0330	0.0460	0.0356	0.0515	0.0478	0.0475	0.0381	0.0476	0.0372	0.0533	0.0358	0.0397	0.0433	0.0364
1997	0.0064	0.0107	0.0151	0.0133	0.0289	0.0221	0.0296	0.0336	0.0468	0.0425	0.0412	0.0486	0.0428	0.0598	0.0458	0.0389	0.0362
1998	0.0198	0.0179	0.0122	0.0328	0.0190	0.0487	0.0456	0.0354	0.0433	0.0428	0.0164	0.0235	0.0473	0.0567	0.0326	0.0363	0.0445
1999	0.0178	0.0182	0.0147	0.0220	0.0303	0.0265	0.0313	0.0384	0.0384	0.0302	0.0400	0.0434	0.0464	0.0396	0.0363	0.0339	0.0465
2000	0.0055	0.0137	0.0133	0.0129	0.0217	0.0226	0.0180	0.0165	0.0208	0.0297	0.0274	0.0216	0.0425	0.0414	0.0425	0.0364	0.0354
2001	0.0061	0.0036	0.0012	0.0085	0.0122	0.0146	0.0220	0.0161	0.0277	0.0216	0.0350	0.0301	0.0326	0.0253	0.0182	0.0312	0.0328
2002	0.0105	0.0002	0.0129	0.0159	0.0130	0.0043	0.0255	0.0294	0.0388	0.0444	0.0468	0.0441	0.0340	0.0543	0.0438	0.0462	0.0387
2003	0.0256	0.0226	0.0286	0.0256	0.0434	0.0381	0.0391	0.0484	0.0228	0.0582	0.0238	0.0406	0.0391	0.0301	0.0351	0.0354	0.0176
2004	0.0203	0.0047	0.0092	0.0162	0.0300	0.0255	0.0246	0.0268	0.0365	0.0417	0.0559	0.0325	0.0439	0.0413	0.0611	0.0293	0.0541
2005	0.0445	0.0297	0.0148	0.0148	0.0445	0.0148	0.0000	0.0891	0.0005	0.0297	0.0455	0.0005	0.0594	0.0747	0.0460	0.0148	0.0445
2006	0.0083	0.0000	0.0000	0.0098	0.0091	0.0173	0.0008	0.0256	0.0422	0.0106	0.0352	0.0196	0.0173	0.0367	0.0837	0.0518	0.0385
2007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0983	0.0000	0.0000	0.2303	0.0169	0.0983	0.0506	0.0169	0.0337
2008	0.0000	0.0000	0.0136	0.0000	0.0000	0.0136	0.0272	0.0131	0.0136	0.0000	0.0000	0.0000	0.0136	0.0660	0.0398	0.0272	0.0136
2009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0110	0.0000	0.0110	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0035	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0460	0.0069	0.0000
2011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0495	0.0000	0.0495	0.0000	0.0000
2012	0.0000	0.0000	0.0092	0.0000	0.0000	0.0000	0.0092	0.0092	0.0092	0.0000	0.0092	0.0000	0.0491	0.0277	0.0000	0.0092	0.0184

Table 5 (Continued).

year	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
1984	0.0039	0.0058	0.0083	0.0067	0.0115	0.0090	0.0076	0.0092	0.0206	0.0177	0.0092	0.0136	0.0115	0.0164	0.0208	0.0203	0.0237
1985	0.0302	0.0245	0.0210	0.0244	0.0247	0.0216	0.0239	0.0380	0.0210	0.0261	0.0346	0.0165	0.0208	0.0237	0.0264	0.0170	0.0210
1986	0.0101	0.0105	0.0087	0.0131	0.0613	0.0424	0.0096	0.0574	0.0114	0.0114	0.0276	0.0743	0.0157	0.0118	0.0087	0.0294	0.0367
1987	0.0095	0.0305	0.0216	0.0325	0.0399	0.0156	0.0072	0.0084	0.0075	0.0095	0.0119	0.0141	0.0075	0.0107	0.0124	0.0135	0.0261
1988	0.0398	0.0308	0.0097	0.0061	0.0262	0.0051	0.0053	0.0027	0.0087	0.0087	0.0034	0.0148	0.0061	0.0061	0.0027	0.0077	0.0051
1989	0.0174	0.0466	0.0379	0.0341	0.0466	0.0229	0.0420	0.0450	0.0600	0.0529	0.0104	0.0158	0.0292	0.0308	0.0095	0.0245	0.0270
1990	0.0141	0.0254	0.0122	0.0375	0.0315	0.0292	0.0277	0.0221	0.0321	0.0301	0.0238	0.0238	0.0130	0.0175	0.0095	0.0146	0.0038
1991	0.0328	0.0279	0.0253	0.0248	0.0304	0.0131	0.0435	0.0192	0.0218	0.0198	0.0248	0.0177	0.0298	0.0107	0.0112	0.0126	0.0061
1992	0.0291	0.0231	0.0301	0.0342	0.0365	0.0336	0.0345	0.0358	0.0306	0.0282	0.0326	0.0293	0.0202	0.0185	0.0200	0.0196	0.0140
1993	0.0307	0.0327	0.0376	0.0400	0.0315	0.0323	0.0273	0.0311	0.0245	0.0251	0.0230	0.0238	0.0226	0.0192	0.0222	0.0199	0.0171
1994	0.0561	0.0225	0.0260	0.0237	0.0272	0.0237	0.0274	0.0235	0.0188	0.0300	0.0325	0.0173	0.0358	0.0263	0.0123	0.0211	0.0161
1995	0.0288	0.0207	0.0275	0.0237	0.0216	0.0169	0.0124	0.0124	0.0127	0.0159	0.0163	0.0078	0.0306	0.0062	0.0077	0.0068	0.0097
1996	0.0281	0.0269	0.0187	0.0230	0.0141	0.0157	0.0157	0.0154	0.0104	0.0171	0.0065	0.0069	0.0079	0.0012	0.0049	0.0081	0.0074
1997	0.0280	0.0349	0.0275	0.0286	0.0172	0.0205	0.0323	0.0138	0.0142	0.0127	0.0071	0.0037	0.0517	0.0085	0.0083	0.0048	0.0054
1998	0.0264	0.0179	0.0261	0.0196	0.0147	0.0179	0.0218	0.0125	0.0122	0.0088	0.0085	0.0105	0.0088	0.0244	0.0062	0.0068	0.0113
1999	0.0273	0.0435	0.0332	0.0244	0.0271	0.0130	0.0222	0.0155	0.0186	0.0219	0.0151	0.0179	0.0126	0.0115	0.0125	0.0085	0.0072
2000	0.0311	0.0260	0.0348	0.0262	0.0302	0.0282	0.0298	0.0176	0.0225	0.0161	0.0263	0.0128	0.0119	0.0119	0.0149	0.0109	0.0188
2001	0.0290	0.0386	0.0359	0.0446	0.0277	0.0301	0.0348	0.0288	0.0421	0.0432	0.0240	0.0337	0.0288	0.0180	0.0204	0.0374	0.0119
2002	0.0234	0.0315	0.0278	0.0256	0.0190	0.0289	0.0284	0.0263	0.0200	0.0099	0.0143	0.0188	0.0116	0.0183	0.0072	0.0157	0.0079
2003	0.0166	0.0261	0.0288	0.0166	0.0354	0.0166	0.0251	0.0218	0.0198	0.0186	0.0010	0.0135	0.0103	0.0093	0.0030	0.0010	0.0188
2004	0.0323	0.0383	0.0365	0.0077	0.0226	0.0391	0.0282	0.0206	0.0135	0.0147	0.0068	0.0106	0.0156	0.0038	0.0047	0.0059	0.0029
2005	0.0297	0.0302	0.0302	0.0455	0.0307	0.0153	0.0455	0.0015	0.0010	0.0302	0.0297	0.0163	0.0015	0.0000	0.0302	0.0153	0.0153
2006	0.0867	0.0453	0.0367	0.0488	0.0528	0.0113	0.0256	0.0264	0.0196	0.0284	0.0015	0.0189	0.0123	0.0091	0.0196	0.0098	0.0091
2007	0.0000	0.0000	0.0169	0.0337	0.0169	0.0169	0.0169	0.0337	0.0337	0.0337	0.0169	0.0169	0.0000	0.0337	0.0000	0.0000	0.0169
2008	0.0000	0.0272	0.0131	0.0131	0.0393	0.0000	0.0272	0.0267	0.0841	0.0267	0.0136	0.0000	0.0131	0.0131	0.0272	0.0443	0.0000
2009	0.0000	0.0110	0.0202	0.0000	0.0202	0.0220	0.0314	0.0220	0.0000	0.0092	0.0092	0.0202	0.0110	0.0277	0.0186	0.0000	0.0092
2010	0.0035	0.0104	0.0035	0.0035	0.0201	0.0000	0.0104	0.0104	0.0069	0.0166	0.0000	0.0329	0.0623	0.0329	0.0236	0.0588	0.0294
2011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0495	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1419	0.1419	0.0000	
2012	0.0092	0.0184	0.0000	0.0000	0.0000	0.0092	0.0184	0.0092	0.0000	0.0092	0.0092	0.0491	0.0000	0.0000	0.0491	0.0092	

Table 5 (Continued).

year	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
1984	0.0161	0.0148	0.0232	0.0237	0.0301	0.0208	0.0224	0.0218	0.0235	0.0252	0.0206	0.0218	0.0219	0.0166	0.0223	0.0190	0.0235
1985	0.0179	0.0107	0.0187	0.0142	0.0125	0.0199	0.0093	0.0138	0.0060	0.0111	0.0109	0.0078	0.0067	0.0087	0.0092	0.0103	0.0054
1986	0.0237	0.0087	0.0096	0.0079	0.0424	0.0259	0.0061	0.0268	0.0061	0.0066	0.0044	0.0380	0.0048	0.0039	0.0061	0.0052	0.0066
1987	0.0124	0.0095	0.0216	0.0087	0.0075	0.0099	0.0241	0.0084	0.0139	0.0176	0.0072	0.0132	0.0156	0.0276	0.0104	0.0099	0.0144
1988	0.0027	0.0000	0.0000	0.0000	0.0017	0.0000	0.0017	0.0000	0.0051	0.0017	0.0000	0.0034	0.0017	0.0061	0.0017	0.0034	0.0017
1989	0.0071	0.0000	0.0087	0.0025	0.0229	0.0071	0.0183	0.0158	0.0079	0.0300	0.0142	0.0008	0.0183	0.0112	0.0191	0.0033	0.0079
1990	0.0047	0.0034	0.0000	0.0038	0.0072	0.0038	0.0063	0.0126	0.0063	0.0034	0.0067	0.0000	0.0121	0.0117	0.0038	0.0126	0.0029
1991	0.0142	0.0081	0.0046	0.0030	0.0081	0.0010	0.0096	0.0025	0.0031	0.0025	0.0031	0.0015	0.0076	0.0025	0.0015	0.0020	0.0076
1992	0.0175	0.0143	0.0120	0.0117	0.0106	0.0100	0.0085	0.0066	0.0073	0.0028	0.0046	0.0054	0.0055	0.0026	0.0059	0.0050	0.0043
1993	0.0139	0.0083	0.0087	0.0086	0.0055	0.0097	0.0065	0.0023	0.0047	0.0040	0.0050	0.0009	0.0030	0.0021	0.0019	0.0011	0.0011
1994	0.0149	0.0087	0.0049	0.0086	0.0037	0.0063	0.0112	0.0012	0.0037	0.0000	0.0013	0.0026	0.0062	0.0037	0.0037	0.0012	0.0038
1995	0.0061	0.0040	0.0080	0.0035	0.0031	0.0013	0.0049	0.0010	0.0013	0.0007	0.0020	0.0007	0.0000	0.0000	0.0007	0.0029	0.0000
1996	0.0014	0.0028	0.0026	0.0065	0.0000	0.0012	0.0012	0.0026	0.0000	0.0000	0.0014	0.0014	0.0026	0.0014	0.0000	0.0000	0.0000
1997	0.0076	0.0046	0.0046	0.0023	0.0048	0.0020	0.0031	0.0029	0.0011	0.0020	0.0029	0.0014	0.0011	0.0213	0.0014	0.0000	0.0011
1998	0.0042	0.0045	0.0068	0.0091	0.0065	0.0042	0.0023	0.0023	0.0023	0.0020	0.0040	0.0000	0.0023	0.0000	0.0000	0.0020	0.0065
1999	0.0044	0.0054	0.0048	0.0033	0.0017	0.0017	0.0043	0.0019	0.0018	0.0036	0.0017	0.0006	0.0003	0.0015	0.0011	0.0011	0.0017
2000	0.0096	0.0176	0.0068	0.0072	0.0104	0.0055	0.0041	0.0128	0.0068	0.0058	0.0070	0.0039	0.0012	0.0000	0.0032	0.0027	0.0031
2001	0.0085	0.0252	0.0168	0.0096	0.0073	0.0108	0.0025	0.0049	0.0012	0.0024	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0012
2002	0.0141	0.0124	0.0059	0.0119	0.0015	0.0033	0.0033	0.0067	0.0119	0.0059	0.0038	0.0015	0.0031	0.0067	0.0046	0.0015	0.0057
2003	0.0135	0.0000	0.0030	0.0010	0.0063	0.0000	0.0093	0.0125	0.0073	0.0000	0.0073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0097	0.0088	0.0068	0.0009	0.0000	0.0000	0.0059	0.0000	0.0059	0.0097	0.0059	0.0029	0.0000	0.0000	0.0009	0.0000	0.0000
2005	0.0153	0.0005	0.0000	0.0005	0.0000	0.0015	0.0000	0.0153	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000
2006	0.0043	0.0091	0.0103	0.0008	0.0013	0.0040	0.0025	0.0000	0.0000	0.0096	0.0083	0.0025	0.0000	0.0008	0.0000	0.0033	0.0025
2007	0.0169	0.0000	0.0000	0.0000	0.0337	0.0000	0.0337	0.0169	0.0000	0.0000	0.0000	0.0169	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0267	0.0136	0.0710	0.0000	0.0267	0.0131	0.0131	0.0000	0.0136	0.0000	0.0136	0.0000	0.0000	0.0136	0.0000	0.0000	0.0000
2009	0.0186	0.0110	0.0000	0.0479	0.0371	0.0371	0.0094	0.0186	0.0092	0.0000	0.0000	0.0202	0.0094	0.0293	0.0275	0.0461	0.0092
2010	0.0000	0.0460	0.0166	0.0626	0.0166	0.0000	0.0000	0.0000	0.0626	0.0294	0.0498	0.0754	0.0000	0.0000	0.0294	0.0166	0.0000
2011	0.0000	0.0000	0.1419	0.1419	0.1419	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0398	0.0000	0.0092	0.0000	0.0000	0.0092	0.0398	0.0491	0.0092	0.0000	0.0000	0.0000	0.0491	0.0092	0.0000	0.0184	0.0000

Table 5 (Continued).

year	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
1984	0.0241	0.0237	0.0167	0.0227	0.0194	0.0204	0.0304	0.0226	0.0161	0.0149	0.0067	0.0119	0.0077	0.0064	0.0054	0.0061	0.0025
1985	0.0053	0.0040	0.0031	0.0030	0.0054	0.0037	0.0036	0.0019	0.0066	0.0012	0.0036	0.0007	0.0023	0.0007	0.0000	0.0000	0.0000
1986	0.0052	0.0048	0.0048	0.0237	0.0039	0.0202	0.0048	0.0052	0.0044	0.0035	0.0022	0.0026	0.0013	0.0004	0.0004	0.0004	0.0004
1987	0.0058	0.0080	0.0308	0.0090	0.0043	0.0043	0.0093	0.0070	0.0082	0.0058	0.0070	0.0070	0.0047	0.0012	0.0070	0.0058	0.0035
1988	0.0000	0.0000	0.0034	0.0053	0.0034	0.0061	0.0000	0.0017	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0008	0.0016	0.0041	0.0025	0.0016	0.0087	0.0041	0.0025	0.0025	0.0025	0.0041	0.0016	0.0000	0.0008	0.0008	0.0000
1990	0.0092	0.0087	0.0150	0.0058	0.0087	0.0058	0.0063	0.0121	0.0087	0.0029	0.0029	0.0058	0.0058	0.0000	0.0005	0.0058	0.0005
1991	0.0025	0.0071	0.0025	0.0046	0.0076	0.0086	0.0076	0.0051	0.0041	0.0071	0.0081	0.0051	0.0091	0.0015	0.0015	0.0025	0.0036
1992	0.0051	0.0048	0.0047	0.0031	0.0037	0.0037	0.0043	0.0035	0.0016	0.0081	0.0030	0.0055	0.0036	0.0040	0.0043	0.0028	0.0024
1993	0.0025	0.0028	0.0011	0.0036	0.0031	0.0012	0.0030	0.0027	0.0016	0.0019	0.0018	0.0012	0.0020	0.0024	0.0011	0.0014	0.0009
1994	0.0013	0.0013	0.0012	0.0000	0.0000	0.0012	0.0026	0.0012	0.0024	0.0026	0.0013	0.0000	0.0000	0.0013	0.0000	0.0000	0.0000
1995	0.0004	0.0000	0.0000	0.0007	0.0000	0.0000	0.0023	0.0007	0.0023	0.0029	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000
1996	0.0026	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0023	0.0000	0.0006	0.0000	0.0006	0.0006	0.0000	0.0011	0.0000	0.0006	0.0006	0.0011	0.0006	0.0000	0.0000	0.0006	0.0006
1998	0.0023	0.0000	0.0000	0.0045	0.0000	0.0000	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	0.0000	0.0000	0.0000
1999	0.0000	0.0003	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008
2000	0.0041	0.0014	0.0027	0.0014	0.0032	0.0041	0.0000	0.0014	0.0068	0.0039	0.0012	0.0017	0.0019	0.0014	0.0014	0.0014	0.0014
2001	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0010	0.0005	0.0007	0.0007	0.0002	0.0020	0.0059	0.0000	0.0005	0.0000	0.0000	0.0000	0.0005	0.0000	0.0026	0.0002	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0063	0.0000	0.0000	0.0063	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0009	0.0000	0.0009	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0179	0.0020	0.0108	0.0013	0.0008	0.0000	0.0013	0.0013	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	0.0083
2007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0169	0.0000	0.0000	0.0000	0.0000	0.0169	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0131	0.0443	0.0262	0.0443	0.0000	0.0000	0.0000	0.0000	0.0131	0.0443	0.0000	0.0000
2009	0.0461	0.0277	0.0371	0.0000	0.0000	0.0000	0.0184	0.0000	0.0000	0.0092	0.0110	0.0459	0.0092	0.0092	0.0092	0.0459	0.0184
2010	0.0294	0.0000	0.0294	0.0000	0.0000	0.0000	0.0000	0.0294	0.0000	0.0294	0.0000	0.0166	0.0000	0.0000	0.0000	0.0332	0.0166
2011	0.0000	0.0000	0.0000	0.0000	0.1419	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0000	0.0000	0.0398	0.0092	0.0398	0.0398	0.0000	0.0797	0.0398	0.0092	0.0000	0.0398	0.0000	0.0398	0.0000	0.0000	0.0000

Table 5 (Continued).

Table 5 (Continued).

Table 5 (Continued).

year	140	141	142	143
1984	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0083
2007	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000
2009	0.0000	0.0000	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000
2011	0.0000	0.0000	0.0000	0.0000
2012	0.0000	0.0000	0.0000	0.0000

Table 6. Weighted length composition (TL in cm) for commercial handline snowy grouper.

year	n.fish	n.trips	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1983	95	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1984	2098	84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1985	3645	136	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
1986	1625	110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0022
1987	1395	90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1988	795	82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002
1989	1279	91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003
1990	1677	83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004
1991	1659	102	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016
1992	2997	111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000
1993	2339	108	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1994	1922	92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000
1995	4544	137	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
1996	2143	105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000
1997	1091	85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1998	1722	81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000
1999	2401	115	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2000	2261	132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
2001	1785	124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006
2002	1280	72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2003	1521	91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2004	2131	89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2005	1359	80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0034
2006	1726	76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2007	1182	133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2008	641	111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2009	600	111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000
2010	865	133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2011	658	94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	926	132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 6 (Continued).

year	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1983	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0105	0.0105	0.0105	0.0105	0.0316	0.0000	0.0105	0.0316	0.0211	0.0421
1984	0.0000	0.0002	0.0007	0.0010	0.0011	0.0006	0.0012	0.0030	0.0048	0.0019	0.0063	0.0047	0.0038	0.0100	0.0084	0.0052	0.0132
1985	0.0000	0.0002	0.0028	0.0006	0.0008	0.0030	0.0069	0.0032	0.0061	0.0174	0.0137	0.0084	0.0121	0.0127	0.0112	0.0170	0.0112
1986	0.0002	0.0041	0.0002	0.0024	0.0022	0.0028	0.0069	0.0075	0.0072	0.0201	0.0135	0.0078	0.0221	0.0177	0.0236	0.0349	0.0191
1987	0.0008	0.0000	0.0008	0.0000	0.0067	0.0045	0.0105	0.0124	0.0172	0.0263	0.0202	0.0189	0.0234	0.0323	0.0363	0.0344	0.0212
1988	0.0008	0.0004	0.0010	0.0092	0.0010	0.0016	0.0018	0.0080	0.0188	0.0082	0.0164	0.0144	0.0200	0.0214	0.0399	0.0380	0.0443
1989	0.0007	0.0010	0.0014	0.0154	0.0027	0.0041	0.0253	0.0144	0.0241	0.0136	0.0308	0.0355	0.0328	0.0414	0.0355	0.0494	0.0368
1990	0.0008	0.0008	0.0004	0.0033	0.0048	0.0016	0.0036	0.0073	0.0052	0.0072	0.0131	0.0160	0.0181	0.0217	0.0149	0.0301	0.0416
1991	0.0005	0.0013	0.0031	0.0028	0.0043	0.0129	0.0123	0.0143	0.0205	0.0211	0.0200	0.0228	0.0226	0.0229	0.0243	0.0265	0.0314
1992	0.0000	0.0000	0.0000	0.0035	0.0015	0.0044	0.0077	0.0077	0.0101	0.0111	0.0139	0.0162	0.0245	0.0204	0.0171	0.0249	0.0299
1993	0.0013	0.0008	0.0011	0.0029	0.0034	0.0073	0.0064	0.0094	0.0064	0.0135	0.0077	0.0126	0.0148	0.0139	0.0125	0.0211	0.0289
1994	0.0007	0.0007	0.0036	0.0016	0.0094	0.0045	0.0076	0.0167	0.0173	0.0212	0.0236	0.0229	0.0317	0.0260	0.0378	0.0289	0.0301
1995	0.0004	0.0004	0.0011	0.0021	0.0027	0.0029	0.0049	0.0066	0.0099	0.0092	0.0136	0.0109	0.0164	0.0219	0.0250	0.0245	0.0317
1996	0.0013	0.0004	0.0008	0.0019	0.0058	0.0026	0.0053	0.0093	0.0234	0.0205	0.0201	0.0227	0.0255	0.0259	0.0285	0.0258	0.0365
1997	0.0000	0.0003	0.0014	0.0061	0.0127	0.0063	0.0114	0.0137	0.0198	0.0195	0.0116	0.0211	0.0183	0.0194	0.0252	0.0220	0.0204
1998	0.0000	0.0006	0.0006	0.0030	0.0058	0.0019	0.0049	0.0107	0.0123	0.0064	0.0137	0.0179	0.0178	0.0185	0.0322	0.0266	0.0301
1999	0.0000	0.0000	0.0015	0.0013	0.0021	0.0022	0.0052	0.0056	0.0070	0.0058	0.0114	0.0152	0.0124	0.0145	0.0148	0.0197	0.0195
2000	0.0008	0.0004	0.0008	0.0010	0.0018	0.0015	0.0056	0.0050	0.0082	0.0117	0.0133	0.0166	0.0224	0.0230	0.0241	0.0162	0.0252
2001	0.0004	0.0011	0.0027	0.0032	0.0054	0.0037	0.0098	0.0126	0.0161	0.0124	0.0181	0.0224	0.0207	0.0160	0.0281	0.0192	0.0315
2002	0.0000	0.0000	0.0000	0.0062	0.0005	0.0091	0.0138	0.0131	0.0177	0.0218	0.0320	0.0294	0.0285	0.0375	0.0395	0.0388	0.0460
2003	0.0005	0.0000	0.0004	0.0030	0.0034	0.0047	0.0085	0.0093	0.0181	0.0210	0.0215	0.0119	0.0231	0.0270	0.0354	0.0254	0.0411
2004	0.0009	0.0002	0.0002	0.0018	0.0032	0.0021	0.0048	0.0124	0.0071	0.0032	0.0078	0.0101	0.0112	0.0156	0.0096	0.0162	0.0553
2005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0014	0.0010	0.0010	0.0196	0.0065	0.0100	0.0041	0.0185	0.0065
2006	0.0000	0.0000	0.0000	0.0003	0.0049	0.0006	0.0013	0.0049	0.0041	0.0028	0.0013	0.0019	0.0062	0.0013	0.0053	0.0047	0.0128
2007	0.0000	0.0000	0.0000	0.0015	0.0019	0.0014	0.0044	0.0044	0.0056	0.0094	0.0057	0.0131	0.0136	0.0126	0.0168	0.0112	0.0144
2008	0.0000	0.0007	0.0014	0.0000	0.0000	0.0022	0.0021	0.0029	0.0036	0.0078	0.0100	0.0100	0.0136	0.0129	0.0136	0.0152	0.0157
2009	0.0000	0.0000	0.0011	0.0000	0.0000	0.0021	0.0037	0.0042	0.0041	0.0064	0.0063	0.0082	0.0105	0.0137	0.0138	0.0105	0.0229
2010	0.0000	0.0000	0.0000	0.0005	0.0020	0.0015	0.0031	0.0021	0.0021	0.0036	0.0087	0.0066	0.0036	0.0111	0.0117	0.0097	0.0081
2011	0.0000	0.0000	0.0004	0.0004	0.0000	0.0000	0.0024	0.0048	0.0004	0.0084	0.0141	0.0013	0.0049	0.0053	0.0216	0.0049	0.0185
2012	0.0004	0.0004	0.0000	0.0000	0.0000	0.0008	0.0008	0.0008	0.0019	0.0019	0.0015	0.0026	0.0056	0.0038	0.0027	0.0129	0.0111

Table 6 (Continued).

year	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	
1983	0.0211	0.0316	0.0316	0.0316	0.0421	0.0842	0.0421	0.0526	0.0421	0.0421	0.0211	0.0211	0.0105	0.0211	0.0000	0.0105	0.0211	
1984	0.0169	0.0090	0.0173	0.0202	0.0168	0.0271	0.0264	0.0210	0.0214	0.0213	0.0366	0.0197	0.0248	0.0189	0.0232	0.0260	0.0281	
1985	0.0179	0.0175	0.0136	0.0207	0.0263	0.0225	0.0370	0.0250	0.0310	0.0302	0.0243	0.0255	0.0268	0.0193	0.0365	0.0290	0.0182	
1986	0.0327	0.0284	0.0391	0.0301	0.0245	0.0267	0.0259	0.0213	0.0348	0.0310	0.0300	0.0465	0.0268	0.0190	0.0163	0.0083	0.0117	0.0133
1987	0.0487	0.0404	0.0417	0.0300	0.0201	0.0445	0.0351	0.0348	0.0310	0.0300	0.0465	0.0343	0.0333	0.0234	0.0250	0.0266	0.0227	
1988	0.0272	0.0327	0.0247	0.0393	0.0342	0.0485	0.0280	0.0216	0.0110	0.0278	0.0291	0.0202	0.0206	0.0324	0.0230	0.0298	0.0316	
1989	0.0443	0.0584	0.0593	0.0445	0.0316	0.0356	0.0248	0.0188	0.0304	0.0247	0.0264	0.0139	0.0316	0.0142	0.0099	0.0271	0.0142	
1990	0.0306	0.0434	0.0416	0.0442	0.0357	0.0371	0.0343	0.0571	0.0304	0.0275	0.0357	0.0292	0.0253	0.0237	0.0269	0.0210	0.0157	
1991	0.0241	0.0325	0.0184	0.0244	0.0348	0.0397	0.0242	0.0326	0.0281	0.0235	0.0301	0.0312	0.0294	0.0250	0.0230	0.0214	0.0204	
1992	0.0340	0.0367	0.0333	0.0306	0.0308	0.0341	0.0302	0.0295	0.0340	0.0316	0.0277	0.0326	0.0294	0.0302	0.0229	0.0240	0.0199	
1993	0.0236	0.0282	0.0273	0.0354	0.0332	0.0320	0.0344	0.0343	0.0329	0.0337	0.0341	0.0243	0.0337	0.0329	0.0316	0.0289	0.0294	
1994	0.0243	0.0328	0.0292	0.0347	0.0416	0.0426	0.0338	0.0348	0.0338	0.0393	0.0330	0.0391	0.0204	0.0250	0.0239	0.0254	0.0214	
1995	0.0286	0.0323	0.0318	0.0425	0.0443	0.0464	0.0387	0.0396	0.0376	0.0314	0.0331	0.0362	0.0274	0.0292	0.0260	0.0236	0.0250	
1996	0.0356	0.0486	0.0387	0.0471	0.0430	0.0487	0.0354	0.0391	0.0432	0.0359	0.0387	0.0291	0.0290	0.0311	0.0161	0.0263	0.0154	
1997	0.0328	0.0521	0.0275	0.0313	0.0295	0.0416	0.0482	0.0479	0.0355	0.0514	0.0403	0.0363	0.0255	0.0323	0.0297	0.0208	0.0209	
1998	0.0337	0.0331	0.0370	0.0342	0.0333	0.0345	0.0386	0.0610	0.0387	0.0363	0.0365	0.0351	0.0347	0.0304	0.0298	0.0241	0.0213	
1999	0.0298	0.0317	0.0331	0.0330	0.0311	0.0336	0.0279	0.0380	0.0332	0.0312	0.0282	0.0208	0.0309	0.0230	0.0229	0.0223	0.0251	
2000	0.0328	0.0324	0.0394	0.0300	0.0321	0.0367	0.0333	0.0322	0.0308	0.0434	0.0322	0.0306	0.0391	0.0278	0.0248	0.0221	0.0195	
2001	0.0279	0.0306	0.0392	0.0299	0.0208	0.0421	0.0229	0.0380	0.0317	0.0299	0.0416	0.0258	0.0338	0.0299	0.0247	0.0272	0.0191	
2002	0.0345	0.0579	0.0321	0.0354	0.0451	0.0440	0.0254	0.0447	0.0290	0.0226	0.0402	0.0175	0.0295	0.0185	0.0201	0.0225	0.0138	
2003	0.0450	0.0498	0.0408	0.0391	0.0553	0.0319	0.0368	0.0451	0.0242	0.0315	0.0246	0.0340	0.0296	0.0215	0.0157	0.0158	0.0144	
2004	0.0263	0.0302	0.0342	0.0373	0.0392	0.0304	0.0229	0.0437	0.0405	0.0503	0.0242	0.0386	0.0192	0.0301	0.0294	0.0332	0.0179	
2005	0.0211	0.0448	0.0168	0.0216	0.0200	0.0289	0.0456	0.0365	0.0333	0.0608	0.0363	0.0428	0.0470	0.0320	0.0398	0.0155	0.0309	
2006	0.0063	0.0208	0.0140	0.0248	0.0261	0.0340	0.0333	0.0243	0.0231	0.0350	0.0485	0.0374	0.0416	0.0323	0.0419	0.0362	0.0339	
2007	0.0100	0.0066	0.0100	0.0057	0.0088	0.0190	0.0168	0.0096	0.0204	0.0203	0.0373	0.0161	0.0198	0.0424	0.0372	0.0402	0.0362	
2008	0.0128	0.0179	0.0178	0.0079	0.0114	0.0228	0.0228	0.0092	0.0137	0.0087	0.0401	0.0207	0.0494	0.0258	0.0093	0.0251	0.0236	
2009	0.0131	0.0129	0.0162	0.0179	0.0205	0.0405	0.0220	0.0212	0.0112	0.0175	0.0079	0.0154	0.0109	0.0269	0.0115	0.0241	0.0090	
2010	0.0163	0.0178	0.0214	0.0204	0.0153	0.0468	0.0455	0.0225	0.0153	0.0370	0.0370	0.0251	0.0256	0.0209	0.0158	0.0153	0.0226	
2011	0.0054	0.0260	0.0161	0.0204	0.0204	0.0220	0.0212	0.0519	0.0364	0.0205	0.0282	0.0464	0.0328	0.0383	0.0332	0.0238	0.0660	
2012	0.0094	0.0083	0.0123	0.0203	0.0177	0.0206	0.0437	0.0271	0.0245	0.0282	0.0316	0.0194	0.0471	0.0264	0.0249	0.0354	0.0334	

Table 6 (Continued).

year	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
1983	0.0211	0.0211	0.0211	0.0105	0.0421	0.0105	0.0211	0.0211	0.0105	0.0000	0.0211	0.0000	0.0316	0.0105	0.0000	0.0105	0.0000
1984	0.0255	0.0202	0.0198	0.0157	0.0188	0.0229	0.0221	0.0164	0.0211	0.0170	0.0030	0.0093	0.0097	0.0095	0.0043	0.0059	0.0102
1985	0.0292	0.0322	0.0215	0.0165	0.0178	0.0181	0.0181	0.0086	0.0119	0.0109	0.0056	0.0118	0.0107	0.0030	0.0032	0.0030	0.0049
1986	0.0119	0.0190	0.0106	0.0115	0.0050	0.0177	0.0130	0.0150	0.0089	0.0146	0.0095	0.0144	0.0158	0.0045	0.0065	0.0105	0.0060
1987	0.0130	0.0149	0.0157	0.0088	0.0096	0.0042	0.0139	0.0103	0.0087	0.0056	0.0033	0.0004	0.0007	0.0024	0.0036	0.0023	0.0007
1988	0.0136	0.0264	0.0172	0.0136	0.0184	0.0100	0.0094	0.0030	0.0062	0.0124	0.0092	0.0034	0.0030	0.0034	0.0062	0.0034	0.0090
1989	0.0158	0.0095	0.0111	0.0058	0.0081	0.0074	0.0078	0.0061	0.0067	0.0021	0.0014	0.0014	0.0010	0.0003	0.0017	0.0003	0.0010
1990	0.0189	0.0208	0.0240	0.0143	0.0268	0.0128	0.0125	0.0065	0.0112	0.0077	0.0114	0.0039	0.0064	0.0083	0.0088	0.0044	0.0024
1991	0.0161	0.0176	0.0155	0.0138	0.0078	0.0143	0.0071	0.0119	0.0131	0.0098	0.0062	0.0072	0.0105	0.0042	0.0046	0.0086	0.0089
1992	0.0242	0.0188	0.0143	0.0129	0.0193	0.0131	0.0143	0.0110	0.0081	0.0082	0.0091	0.0080	0.0063	0.0041	0.0086	0.0049	0.0049
1993	0.0276	0.0229	0.0271	0.0170	0.0165	0.0131	0.0193	0.0151	0.0126	0.0088	0.0049	0.0083	0.0091	0.0050	0.0052	0.0076	0.0028
1994	0.0218	0.0106	0.0193	0.0109	0.0134	0.0076	0.0067	0.0107	0.0087	0.0084	0.0095	0.0036	0.0033	0.0036	0.0058	0.0026	0.0015
1995	0.0239	0.0240	0.0167	0.0143	0.0172	0.0160	0.0161	0.0093	0.0106	0.0078	0.0096	0.0088	0.0068	0.0063	0.0058	0.0045	0.0027
1996	0.0122	0.0119	0.0140	0.0060	0.0073	0.0070	0.0058	0.0058	0.0028	0.0066	0.0072	0.0058	0.0031	0.0044	0.0041	0.0040	0.0031
1997	0.0233	0.0202	0.0110	0.0063	0.0093	0.0089	0.0015	0.0073	0.0042	0.0056	0.0058	0.0043	0.0046	0.0041	0.0038	0.0033	0.0012
1998	0.0282	0.0234	0.0122	0.0112	0.0124	0.0090	0.0165	0.0103	0.0100	0.0073	0.0085	0.0074	0.0051	0.0018	0.0041	0.0034	0.0008
1999	0.0192	0.0180	0.0201	0.0180	0.0161	0.0086	0.0170	0.0195	0.0111	0.0110	0.0103	0.0140	0.0105	0.0076	0.0057	0.0064	0.0030
2000	0.0170	0.0084	0.0151	0.0156	0.0136	0.0117	0.0105	0.0114	0.0071	0.0090	0.0064	0.0064	0.0065	0.0034	0.0053	0.0040	0.0046
2001	0.0214	0.0095	0.0138	0.0181	0.0159	0.0188	0.0163	0.0176	0.0105	0.0101	0.0057	0.0053	0.0094	0.0060	0.0083	0.0110	0.0062
2002	0.0022	0.0096	0.0098	0.0151	0.0082	0.0112	0.0081	0.0048	0.0038	0.0106	0.0033	0.0012	0.0076	0.0017	0.0057	0.0095	0.0033
2003	0.0150	0.0100	0.0111	0.0085	0.0120	0.0064	0.0043	0.0081	0.0099	0.0035	0.0085	0.0056	0.0026	0.0093	0.0017	0.0097	0.0043
2004	0.0232	0.0131	0.0160	0.0135	0.0043	0.0103	0.0103	0.0092	0.0069	0.0078	0.0127	0.0062	0.0131	0.0021	0.0152	0.0014	0.0113
2005	0.0254	0.0211	0.0168	0.0127	0.0291	0.0117	0.0126	0.0185	0.0139	0.0136	0.0243	0.0054	0.0068	0.0068	0.0082	0.0064	0.0014
2006	0.0493	0.0333	0.0237	0.0315	0.0252	0.0348	0.0131	0.0082	0.0283	0.0228	0.0072	0.0153	0.0069	0.0112	0.0044	0.0069	0.0028
2007	0.0380	0.0289	0.0408	0.0388	0.0248	0.0170	0.0345	0.0251	0.0204	0.0214	0.0148	0.0234	0.0186	0.0191	0.0154	0.0144	0.0169
2008	0.0108	0.0086	0.0265	0.0115	0.0094	0.0194	0.0044	0.0087	0.0064	0.0108	0.0193	0.0300	0.0051	0.0565	0.0150	0.0300	0.0308
2009	0.0314	0.0230	0.0047	0.0047	0.0031	0.0064	0.0251	0.0813	0.0246	0.0244	0.0052	0.0261	0.0256	0.0252	0.0225	0.0026	0.0027
2010	0.0308	0.0147	0.0293	0.0164	0.0185	0.0267	0.0132	0.0360	0.0062	0.0144	0.0051	0.0257	0.0061	0.0252	0.0159	0.0036	0.0041
2011	0.0517	0.0498	0.0402	0.0363	0.0393	0.0052	0.0369	0.0105	0.0220	0.0052	0.0168	0.0290	0.0161	0.0021	0.0277	0.0024	0.0039
2012	0.0366	0.0272	0.0282	0.0308	0.0215	0.0312	0.0234	0.0243	0.0148	0.0170	0.0165	0.0131	0.0148	0.0184	0.0187	0.0213	0.0148

Table 6 (Continued).

year	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91
1983	0.0000	0.0000	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0099	0.0080	0.0177	0.0106	0.0111	0.0168	0.0070	0.0128	0.0178	0.0093	0.0215	0.0107	0.0124	0.0192	0.0106	0.0186	0.0160
1985	0.0016	0.0059	0.0108	0.0068	0.0086	0.0093	0.0094	0.0028	0.0050	0.0047	0.0057	0.0079	0.0108	0.0070	0.0048	0.0059	0.0107
1986	0.0126	0.0183	0.0089	0.0083	0.0139	0.0140	0.0061	0.0177	0.0083	0.0065	0.0102	0.0022	0.0020	0.0065	0.0081	0.0022	0.0020
1987	0.0007	0.0045	0.0029	0.0000	0.0019	0.0037	0.0020	0.0019	0.0029	0.0066	0.0019	0.0064	0.0012	0.0029	0.0004	0.0004	0.0004
1988	0.0002	0.0060	0.0060	0.0060	0.0060	0.0030	0.0030	0.0090	0.0030	0.0002	0.0000	0.0062	0.0000	0.0030	0.0000	0.0030	0.0060
1989	0.0020	0.0027	0.0003	0.0017	0.0003	0.0000	0.0033	0.0020	0.0007	0.0000	0.0017	0.0003	0.0017	0.0017	0.0000	0.0050	0.0000
1990	0.0036	0.0059	0.0044	0.0016	0.0025	0.0020	0.0008	0.0004	0.0020	0.0039	0.0020	0.0000	0.0004	0.0008	0.0000	0.0023	0.0031
1991	0.0057	0.0062	0.0060	0.0059	0.0014	0.0046	0.0041	0.0027	0.0053	0.0021	0.0012	0.0007	0.0026	0.0048	0.0041	0.0014	0.0027
1992	0.0062	0.0071	0.0062	0.0034	0.0033	0.0035	0.0026	0.0033	0.0031	0.0040	0.0025	0.0030	0.0031	0.0036	0.0033	0.0030	0.0047
1993	0.0053	0.0050	0.0054	0.0023	0.0025	0.0026	0.0020	0.0071	0.0037	0.0034	0.0024	0.0015	0.0010	0.0060	0.0061	0.0041	0.0036
1994	0.0011	0.0044	0.0022	0.0025	0.0018	0.0022	0.0007	0.0007	0.0007	0.0018	0.0004	0.0007	0.0018	0.0004	0.0007	0.0011	0.0007
1995	0.0042	0.0045	0.0031	0.0039	0.0019	0.0023	0.0013	0.0027	0.0021	0.0014	0.0008	0.0025	0.0012	0.0010	0.0006	0.0002	0.0008
1996	0.0037	0.0021	0.0016	0.0034	0.0031	0.0016	0.0019	0.0004	0.0015	0.0008	0.0004	0.0014	0.0017	0.0011	0.0009	0.0000	0.0000
1997	0.0035	0.0024	0.0000	0.0012	0.0007	0.0026	0.0012	0.0022	0.0012	0.0019	0.0039	0.0015	0.0024	0.0024	0.0014	0.0029	0.0000
1998	0.0072	0.0014	0.0031	0.0010	0.0010	0.0030	0.0012	0.0023	0.0010	0.0004	0.0008	0.0014	0.0002	0.0014	0.0002	0.0012	0.0002
1999	0.0054	0.0030	0.0050	0.0050	0.0070	0.0054	0.0060	0.0034	0.0061	0.0024	0.0066	0.0091	0.0043	0.0063	0.0063	0.0073	0.0045
2000	0.0041	0.0036	0.0021	0.0021	0.0008	0.0009	0.0011	0.0047	0.0029	0.0041	0.0040	0.0032	0.0028	0.0026	0.0036	0.0041	0.0040
2001	0.0033	0.0030	0.0019	0.0087	0.0024	0.0018	0.0022	0.0042	0.0027	0.0021	0.0004	0.0012	0.0007	0.0021	0.0007	0.0039	0.0021
2002	0.0015	0.0033	0.0000	0.0026	0.0010	0.0010	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0015	0.0000	0.0010	0.0000	0.0005
2003	0.0034	0.0064	0.0038	0.0072	0.0034	0.0030	0.0038	0.0008	0.0018	0.0013	0.0038	0.0034	0.0034	0.0030	0.0030	0.0055	0.0000
2004	0.0157	0.0018	0.0014	0.0009	0.0049	0.0014	0.0016	0.0108	0.0016	0.0097	0.0051	0.0044	0.0049	0.0046	0.0044	0.0090	0.0005
2005	0.0057	0.0003	0.0091	0.0071	0.0003	0.0054	0.0094	0.0068	0.0091	0.0087	0.0000	0.0003	0.0047	0.0094	0.0044	0.0000	0.0044
2006	0.0056	0.0161	0.0025	0.0081	0.0019	0.0075	0.0038	0.0028	0.0019	0.0068	0.0050	0.0009	0.0041	0.0006	0.0019	0.0003	0.0003
2007	0.0047	0.0042	0.0112	0.0075	0.0141	0.0075	0.0005	0.0099	0.0000	0.0066	0.0033	0.0070	0.0037	0.0066	0.0000	0.0010	0.0000
2008	0.0157	0.0022	0.0015	0.0007	0.0151	0.0143	0.0007	0.0150	0.0150	0.0007	0.0000	0.0143	0.0000	0.0143	0.0000	0.0000	0.0000
2009	0.0412	0.0042	0.0208	0.0000	0.0016	0.0193	0.0011	0.0219	0.0193	0.0027	0.0000	0.0193	0.0011	0.0385	0.0011	0.0005	0.0011
2010	0.0056	0.0227	0.0036	0.0232	0.0108	0.0118	0.0108	0.0118	0.0118	0.0015	0.0005	0.0020	0.0000	0.0010	0.0206	0.0103	0.0010
2011	0.0020	0.0004	0.0004	0.0020	0.0000	0.0000	0.0004	0.0000	0.0000	0.0004	0.0004	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000
2012	0.0090	0.0126	0.0266	0.0104	0.0026	0.0039	0.0004	0.0058	0.0065	0.0079	0.0039	0.0015	0.0083	0.0000	0.0054	0.0011	0.0039

Table 6 (Continued).

year	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
1983	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0105	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0145	0.0064	0.0053	0.0078	0.0058	0.0072	0.0045	0.0086	0.0061	0.0002	0.0016	0.0014	0.0014	0.0002	0.0028	0.0002	0.0000
1985	0.0092	0.0065	0.0104	0.0068	0.0105	0.0122	0.0080	0.0025	0.0103	0.0081	0.0002	0.0040	0.0019	0.0021	0.0077	0.0020	0.0020
1986	0.0002	0.0004	0.0039	0.0063	0.0039	0.0022	0.0079	0.0000	0.0059	0.0079	0.0000	0.0022	0.0043	0.0000	0.0000	0.0039	0.0020
1987	0.0000	0.0007	0.0010	0.0012	0.0000	0.0008	0.0023	0.0012	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0060	0.0030	0.0060	0.0060	0.0030	0.0030	0.0030	0.0000	0.0030	0.0030	0.0000	0.0030	0.0000	0.0030	0.0000	0.0000	0.0030
1989	0.0000	0.0017	0.0000	0.0017	0.0003	0.0017	0.0017	0.0003	0.0000	0.0017	0.0017	0.0000	0.0017	0.0000	0.0000	0.0000	0.0017
1990	0.0024	0.0016	0.0004	0.0004	0.0024	0.0000	0.0004	0.0008	0.0012	0.0000	0.0004	0.0008	0.0008	0.0000	0.0000	0.0004	0.0000
1991	0.0027	0.0055	0.0048	0.0021	0.0014	0.0041	0.0027	0.0021	0.0014	0.0021	0.0021	0.0000	0.0007	0.0007	0.0000	0.0000	0.0000
1992	0.0064	0.0049	0.0049	0.0041	0.0033	0.0021	0.0030	0.0045	0.0013	0.0003	0.0007	0.0008	0.0000	0.0000	0.0007	0.0000	0.0000
1993	0.0041	0.0019	0.0008	0.0056	0.0005	0.0021	0.0008	0.0005	0.0010	0.0000	0.0003	0.0005	0.0000	0.0008	0.0003	0.0000	0.0000
1994	0.0004	0.0007	0.0007	0.0000	0.0015	0.0004	0.0007	0.0007	0.0007	0.0000	0.0000	0.0000	0.0011	0.0000	0.0004	0.0004	0.0000
1995	0.0004	0.0011	0.0008	0.0012	0.0006	0.0006	0.0004	0.0004	0.0000	0.0004	0.0000	0.0002	0.0000	0.0000	0.0004	0.0000	0.0002
1996	0.0000	0.0011	0.0004	0.0000	0.0000	0.0004	0.0004	0.0004	0.0000	0.0006	0.0000	0.0000	0.0009	0.0000	0.0000	0.0003	0.0000
1997	0.0000	0.0000	0.0003	0.0023	0.0000	0.0023	0.0024	0.0012	0.0012	0.0000	0.0000	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000
1998	0.0010	0.0000	0.0010	0.0000	0.0002	0.0010	0.0002	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000
1999	0.0043	0.0040	0.0059	0.0028	0.0055	0.0057	0.0046	0.0043	0.0041	0.0026	0.0050	0.0029	0.0013	0.0009	0.0017	0.0000	0.0000
2000	0.0073	0.0049	0.0029	0.0049	0.0102	0.0062	0.0049	0.0078	0.0049	0.0045	0.0036	0.0025	0.0032	0.0029	0.0004	0.0008	0.0000
2001	0.0007	0.0024	0.0004	0.0019	0.0000	0.0000	0.0004	0.0012	0.0027	0.0015	0.0007	0.0004	0.0015	0.0000	0.0004	0.0000	0.0000
2002	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0005	0.0007	0.0000	0.0005	0.0000	0.0005	0.0000
2003	0.0009	0.0008	0.0000	0.0000	0.0005	0.0000	0.0004	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0005	0.0000	0.0009	0.0000	0.0002	0.0044	0.0002	0.0049	0.0046	0.0007	0.0002	0.0000	0.0046	0.0046	0.0005	0.0002	0.0005
2005	0.0000	0.0003	0.0000	0.0000	0.0003	0.0087	0.0000	0.0044	0.0000	0.0007	0.0003	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000
2006	0.0009	0.0013	0.0016	0.0025	0.0019	0.0044	0.0016	0.0013	0.0016	0.0022	0.0031	0.0028	0.0006	0.0025	0.0013	0.0034	0.0022
2007	0.0000	0.0037	0.0000	0.0033	0.0037	0.0005	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0005	0.0000	0.0005	0.0000	0.0000
2008	0.0136	0.0000	0.0272	0.0000	0.0136	0.0000	0.0000	0.0000	0.0000	0.0136	0.0000	0.0136	0.0136	0.0007	0.0000	0.0000	0.0000
2009	0.0005	0.0203	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000	0.0193	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.0103	0.0005	0.0103	0.0000	0.0000	0.0108	0.0000	0.0000	0.0103	0.0000	0.0005	0.0103	0.0000	0.0000	0.0108	0.0000	0.0000
2011	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0039	0.0004	0.0079	0.0122	0.0000	0.0000	0.0039	0.0000	0.0039	0.0000	0.0039	0.0000	0.0000	0.0000	0.0000	0.0039	0.0000

Table 6 (Continued).

Table 6 (Continued).

year	126	127	128	129	130	131	132
1983	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
1987	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 7. Weighted age composition for commercial longline snowy grouper with ages 14-35 pooled to the 14-plus bin.

year	n.fish	n.trips	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1998	62	7	0.0000	0.0000	0.0531	0.1194	0.2077	0.2358	0.0789	0.1607	0.0635	0.0152	0.0386	0.0053	0.0113	0.0000	0.0106
1999	64	6	0.0000	0.0000	0.0000	0.0808	0.1656	0.2258	0.1986	0.1471	0.0829	0.0298	0.0275	0.0075	0.0000	0.0000	0.0344
2000	109	11	0.0000	0.0000	0.0000	0.0401	0.1568	0.1562	0.1300	0.1982	0.1525	0.0462	0.0337	0.0227	0.0099	0.0394	0.0141
2001	104	10	0.0000	0.0000	0.0028	0.0491	0.0454	0.0936	0.1804	0.2116	0.1202	0.0847	0.1055	0.0435	0.0303	0.0213	0.0115
2002	117	9	0.0000	0.0000	0.0525	0.0671	0.2551	0.1662	0.1235	0.1494	0.0451	0.0612	0.0116	0.0072	0.0220	0.0072	0.0317
2003	69	6	0.0000	0.0000	0.0000	0.1743	0.3619	0.2673	0.0895	0.0692	0.0377	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2004	86	5	0.0000	0.0000	0.0885	0.2005	0.2792	0.2730	0.0628	0.0551	0.0282	0.0128	0.0000	0.0000	0.0000	0.0000	0.0000
2005	41	6	0.0000	0.0000	0.0685	0.1028	0.2486	0.3199	0.0560	0.0813	0.0703	0.0000	0.0348	0.0177	0.0000	0.0000	0.0000
2006	161	19	0.0000	0.0000	0.0053	0.0849	0.3265	0.2859	0.1410	0.0482	0.0328	0.0146	0.0031	0.0022	0.0000	0.0000	0.0556
2007	33	9	0.0000	0.0000	0.0000	0.0000	0.1715	0.3236	0.0971	0.1165	0.1553	0.0777	0.0000	0.0000	0.0000	0.0194	0.0388
2008	53	12	0.0000	0.0000	0.0000	0.0364	0.0354	0.1557	0.1883	0.2227	0.1283	0.1418	0.0000	0.0175	0.0000	0.0091	0.0648
2009	51	21	0.0000	0.0000	0.0000	0.0000	0.0000	0.1197	0.0241	0.1217	0.1616	0.2169	0.0119	0.0626	0.0846	0.0787	0.1182
2010	35	13	0.0000	0.0000	0.0000	0.0000	0.0536	0.0811	0.0728	0.1826	0.1122	0.0829	0.1122	0.0878	0.0978	0.0342	0.0829
2011	1	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	
2012	44	10	0.0000	0.0000	0.0000	0.1252	0.0461	0.0692	0.0263	0.0263	0.1414	0.0789	0.0690	0.0724	0.1117	0.0854	0.1479

Table 8. Weighted age composition for commercial handline snowy grouper with ages 14-34 pooled to the 14-plus bin.

year	n.fish	n.trips	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1992	38	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.3751	0.2966	0.1895	0.0601	0.0485	0.0000	0.0000	0.0000	0.0303	
1993	3	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.3517	0.0000	0.3140	0.3343	0.0000	0.0000	0.0000	0.0000	0.0000	
1995	1	1	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
1996	5	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.5613	0.1155	0.3058	0.0000	0.0000	0.0000	0.0000	0.0000	0.0173	
1997	105	11	0.0000	0.0000	0.0477	0.1340	0.2162	0.2988	0.1062	0.0769	0.0538	0.0568	0.0071	0.0000	0.0000	0.0000	
1998	72	12	0.0000	0.0000	0.0667	0.2264	0.2145	0.2531	0.0870	0.1140	0.0000	0.0053	0.0249	0.0000	0.0000	0.0082	
1999	64	7	0.0000	0.0000	0.0099	0.0419	0.1305	0.1726	0.1536	0.0843	0.2342	0.0543	0.0040	0.0327	0.0322	0.0000	
2000	87	15	0.0000	0.0000	0.0204	0.0378	0.1561	0.2534	0.1274	0.1613	0.0775	0.0170	0.0110	0.0441	0.0355	0.0082	
2001	70	10	0.0000	0.0071	0.0213	0.0739	0.2820	0.1632	0.1724	0.0787	0.1021	0.0069	0.0139	0.0145	0.0277	0.0248	
2002	60	9	0.0000	0.0000	0.1055	0.3203	0.2042	0.2146	0.0497	0.0401	0.0397	0.0000	0.0000	0.0143	0.0042	0.0048	
2003	83	7	0.0000	0.0000	0.0919	0.2518	0.3007	0.2661	0.0634	0.0103	0.0041	0.0000	0.0117	0.0000	0.0000	0.0000	
2004	215	18	0.0000	0.0000	0.0487	0.1532	0.2362	0.2194	0.1451	0.0991	0.0513	0.0088	0.0075	0.0106	0.0052	0.0055	
2005	381	49	0.0000	0.0000	0.0017	0.0518	0.1450	0.2470	0.1984	0.1015	0.0796	0.0599	0.0456	0.0123	0.0208	0.0072	
2006	189	36	0.0000	0.0055	0.0128	0.0703	0.2032	0.3260	0.2271	0.0772	0.0384	0.0083	0.0208	0.0104	0.0000	0.0000	
2007	963	110	0.0000	0.0027	0.0245	0.0924	0.1139	0.1736	0.2481	0.1684	0.0899	0.0432	0.0176	0.0094	0.0091	0.0000	
2008	538	101	0.0000	0.0044	0.0232	0.0608	0.1276	0.1720	0.1762	0.1899	0.1005	0.0359	0.0449	0.0008	0.0172	0.0000	
2009	455	115	0.0000	0.0097	0.0685	0.1042	0.1334	0.0990	0.1486	0.1893	0.0735	0.0418	0.0265	0.0406	0.0023	0.0211	
2010	735	111	0.0000	0.0279	0.1856	0.2237	0.1336	0.1099	0.0606	0.0898	0.0687	0.0445	0.0204	0.0087	0.0012	0.0006	
2011	599	89	0.0000	0.0104	0.1462	0.2709	0.2250	0.1682	0.1027	0.0316	0.0190	0.0148	0.0104	0.0004	0.0000	0.0004	
2012	834	113	0.0008	0.0173	0.0786	0.2130	0.2447	0.1399	0.1234	0.0648	0.0408	0.0303	0.0218	0.0168	0.0000	0.0057	
																0.0021	

Table 9. Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	Fish(N)	Trips(N)	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1972	70	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1973	44	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1974	242	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1975	196	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1976	233	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1977	122	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1978	51	18	-	-	-	-	-	-	-	-	-	0.0196	-	-	-	-
1979	48	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1980	54	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1981	85	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1982	24	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1983	75	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	43	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	72	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1986	77	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1987	36	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1988	47	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1989	51	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1990	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1991	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	10	9	0.1000	-	0.1000	-	-	-	-	-	-	-	-	-	-	-
1994	17	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995	21	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1996	108	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1997	144	29	-	-	0.0069	-	-	-	-	-	-	-	-	-	-	-
1998	69	19	0.0145	-	-	-	-	-	-	-	-	-	-	-	-	-
1999	34	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2000	15	10	-	-	-	-	-	0.0667	-	-	-	-	-	-	-	-
2001	49	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2002	24	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2003	30	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2004	53	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2005	30	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2006	43	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2007	56	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2008	35	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2009	53	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2010	86	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2011	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	20	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	20	21	22	23	24	25	26	27	28	29	30	31	32
1972	-	-	-	-	-	-	-	-	-	-	-	-	0.0143
1973	-	-	-	-	-	-	-	-	-	-	-	0.0227	-
1974	-	-	-	-	-	-	-	-	-	-	-	-	0.0124
1975	-	-	-	-	-	-	0.0102	0.0051	0.0102	0.0102	0.0153	0.0051	-
1976	-	-	0.0043	-	-	-	-	-	-	-	0.0043	0.0043	-
1977	-	-	-	-	-	-	0.0082	-	-	-	0.0082	0.0164	-
1978	-	-	-	0.0196	-	-	-	0.0392	-	0.0196	-	0.0196	0.0196
1979	-	-	-	-	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	0.0185	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	0.0118	0.0235	0.0118
1982	-	-	-	-	-	-	-	-	-	0.0417	-	0.0417	-
1983	-	-	0.0133	-	-	-	0.0133	-	0.0133	-	-	0.0267	0.0133
1984	-	-	-	-	-	-	-	-	-	-	0.0698	0.0698	0.0233
1985	-	-	-	-	0.0139	0.0139	0.0417	0.0139	0.0139	0.0556	0.0139	0.0139	0.0278
1986	0.0130	-	-	-	0.0260	0.0130	0.0260	0.0260	0.0260	0.0130	0.0130	0.0390	0.0130
1987	-	-	-	-	-	0.0278	-	0.0278	-	-	0.0556	0.0556	-
1988	-	0.0213	-	-	-	-	0.0213	0.0213	0.0213	0.0213	0.0213	-	0.0426
1989	-	-	-	-	-	-	-	-	-	-	0.0196	0.0392	0.0196
1990	-	-	-	-	-	-	-	0.1429	-	-	-	0.1429	-
1991	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	0.5000	-	-	-	-
1993	-	-	-	-	-	0.1000	0.1000	-	-	-	0.1000	-	-
1994	-	-	-	-	-	0.0588	-	-	-	0.0588	0.0588	0.0588	-
1995	-	-	0.0476	-	-	-	-	-	-	-	-	0.1429	0.1429
1996	0.0093	-	0.0093	-	-	-	0.0093	0.0093	0.0093	0.0093	0.0093	-	0.0370
1997	-	-	-	-	-	-	0.0139	-	-	-	0.0069	-	0.0278
1998	-	-	-	-	-	-	-	-	-	-	-	0.0145	-
1999	-	-	-	-	-	-	-	-	-	-	-	0.0294	0.0588
2000	-	-	-	-	-	-	-	-	-	0.0667	-	-	-
2001	-	-	-	-	-	-	0.0204	-	-	0.0408	-	-	-
2002	-	-	-	-	-	-	-	0.0417	-	0.0417	0.0833	-	-
2003	-	-	-	-	-	-	-	0.0333	0.0333	-	0.0667	-	-
2004	-	-	-	-	-	-	-	0.0189	-	0.0189	-	0.0377	0.0377
2005	-	-	-	-	-	-	-	-	-	-	0.0667	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	0.0233	-
2007	-	-	-	-	0.0179	-	-	-	-	0.0179	0.0179	0.0357	-
2008	-	-	-	-	0.0286	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	0.0189	-	-	-	0.0189
2010	-	-	-	-	-	-	-	0.0116	-	-	0.0116	0.0116	0.0116
2011	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-	-	-	-	-	0.0500

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	33	34	35	36	37	38	39	40	41	42	43	44
1972	-	0.0143	0.0143	-	0.0143	-	0.0143	-	-	0.0143	0.0143	-
1973	0.0227	-	-	-	-	0.0227	0.0227	-	0.0455	-	0.0455	-
1974	0.0124	-	-	0.0041	0.0124	0.0041	0.0083	0.0083	0.0124	0.0165	0.0165	0.0083
1975	0.0051	0.0051	0.0051	0.0204	0.0051	0.0102	-	0.0102	0.0051	-	-	0.0204
1976	0.0129	0.0086	0.0129	0.0043	0.0086	-	0.0172	0.0258	0.0343	0.0129	0.0515	0.0300
1977	-	-	0.0164	0.0082	0.0164	-	0.0410	0.0164	0.0164	0.0164	0.0164	0.0410
1978	-	-	0.0196	0.0196	-	-	-	0.0196	0.0588	0.0392	0.0196	0.0196
1979	-	0.0208	-	0.0417	0.0417	-	-	0.0208	0.0208	-	-	-
1980	-	-	-	-	0.0185	-	-	0.0370	0.0185	0.0370	0.0370	-
1981	-	0.0118	0.0235	-	0.0235	0.0471	0.0118	-	0.0706	0.0471	-	0.0118
1982	-	-	0.0417	0.0417	0.0417	0.0417	-	-	0.0417	0.0417	0.0417	-
1983	0.0533	0.0133	0.0400	0.0133	-	0.0133	0.0267	-	0.0267	-	0.0533	0.0400
1984	0.0233	0.0233	0.0233	0.0698	0.0465	0.0233	-	0.0465	-	0.0465	0.0233	-
1985	0.0694	0.0556	0.0278	0.0833	0.0139	0.0139	0.0417	0.0278	0.0139	0.0278	0.0278	-
1986	0.0390	0.0390	0.0779	0.0390	0.0260	0.0390	0.0390	0.0390	0.0260	0.0519	0.0519	0.0260
1987	0.0556	0.0278	0.0278	0.0556	-	0.0278	0.0278	-	0.0278	-	0.0278	-
1988	0.0638	0.0213	-	0.0213	0.0213	0.0213	0.0426	0.0426	0.0426	0.0213	0.0213	0.0213
1989	0.0196	0.0392	0.0784	0.0392	0.0392	0.0196	-	0.0588	0.0588	-	-	-
1990	0.1429	-	0.1429	0.1429	-	-	-	-	-	-	0.1429	-
1991	-	-	0.1667	-	0.1667	-	-	-	-	-	0.1667	-
1992	-	-	-	-	-	-	-	-	-	-	0.5000	-
1993	0.1000	0.1000	0.1000	-	-	0.1000	-	-	-	-	-	-
1994	0.0588	0.0588	0.1176	0.0588	0.1765	0.0588	-	-	-	-	0.0588	-
1995	-	0.0476	-	-	0.0952	-	0.0952	0.1429	0.0476	-	0.0952	0.0476
1996	-	-	0.0185	0.0278	0.0185	0.0185	0.0278	0.0093	0.0556	0.0463	0.0370	0.0463
1997	0.0069	0.0069	0.0139	0.0347	0.0139	0.0278	0.0208	-	0.0278	0.0139	0.0278	0.0417
1998	0.0290	0.0145	0.0145	0.0145	0.0725	-	-	-	0.0145	0.0435	-	-
1999	-	-	-	0.0294	0.0294	0.0588	0.0294	0.0294	-	-	0.0588	0.0294
2000	-	-	0.0667	-	0.0667	-	-	-	-	0.0667	-	0.0667
2001	0.0204	0.0408	0.0408	0.0204	0.0612	0.0408	-	-	-	-	0.0204	0.0204
2002	0.0417	0.0833	-	-	-	-	-	-	0.0417	0.0417	0.1250	-
2003	0.0333	0.0333	0.0667	0.1000	-	-	-	0.0333	0.0333	0.0333	-	0.0333
2004	0.0566	0.0755	0.0189	0.0189	-	0.0189	0.0189	0.0189	-	0.0189	0.0755	0.0189
2005	-	-	0.0333	0.0333	0.0333	-	-	0.0333	0.0333	-	0.0333	0.0333
2006	-	-	-	-	-	-	-	-	-	0.0233	0.0233	-
2007	0.0179	-	-	-	-	0.0179	-	0.0357	-	0.0179	-	0.0179
2008	-	-	0.0286	0.0286	-	-	-	-	0.0857	-	0.0286	0.0286
2009	-	-	-	-	-	-	0.0189	-	0.0189	-	-	0.0189
2010	-	0.0116	0.0116	-	0.0116	-	0.0116	-	0.0116	0.0116	-	-
2011	-	0.3333	0.3333	-	-	-	-	-	-	-	-	-
2012	-	-	-	0.0500	0.0500	-	-	-	-	-	-	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	45	46	47	48	49	50	51	52	53	54	55	56
1972	0.0143	0.0143	0.0143	0.0143	-	0.0143	0.0286	-	-	0.0286	-	-
1973	0.0909	-	0.0227	0.0455	0.0455	-	0.0455	-	-	-	-	-
1974	0.0165	0.0248	0.0041	0.0124	0.0124	0.0248	0.0165	0.0165	0.0124	0.0331	0.0165	0.0372
1975	0.0051	0.0153	0.0204	0.0102	0.0153	0.0102	0.0204	0.0204	0.0306	0.0357	0.0408	0.0051
1976	0.0129	0.0086	0.0215	0.0172	0.0258	0.0086	0.0300	0.0300	0.0258	0.0258	0.0172	0.0215
1977	0.0410	0.0492	0.0410	0.0082	0.0410	0.0328	0.0410	0.0164	0.0164	0.0082	0.0246	0.0574
1978	0.0196	0.0196	-	0.0588	-	0.0392	0.0784	0.0196	0.0588	0.0980	0.0392	0.0392
1979	0.0208	0.0417	0.0208	0.0417	0.0208	0.0417	-	-	0.0208	0.0208	0.0417	0.0833
1980	0.0556	0.0556	0.0370	-	0.0556	0.0185	0.0185	-	0.0741	0.0370	0.0185	-
1981	0.0235	0.0353	0.0471	0.0353	-	0.0235	0.0588	0.0235	0.0118	0.0235	0.0235	0.0471
1982	-	0.0833	-	-	-	-	-	-	0.0417	-	-	-
1983	0.0800	0.0800	-	0.0667	0.0800	-	-	-	0.0133	0.0133	0.0267	0.0267
1984	-	0.0698	0.0465	-	0.0465	0.0233	-	0.0698	-	0.0233	0.0233	-
1985	0.0278	0.0417	0.0556	0.0139	0.0139	0.0139	-	0.0139	-	-	0.0278	0.0139
1986	-	0.0519	0.0130	0.0260	0.0260	0.0130	-	0.0130	0.0390	0.0260	0.0130	0.0130
1987	0.0278	0.0278	0.1111	0.0278	0.0556	-	0.0278	0.0278	0.0833	-	0.0833	-
1988	-	0.0213	0.0426	0.0213	-	0.0213	0.1064	0.0638	0.0426	-	0.0638	0.0213
1989	0.0196	0.0196	0.0196	-	0.0196	-	0.0196	-	0.0392	0.0196	0.0588	0.0196
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	0.1667	0.1667	-	-	0.1667	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-
1994	-	0.0588	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	0.0476	0.0476	-	-	-	-	-
1996	0.0278	0.0741	0.0463	0.0093	0.0185	0.0278	0.0185	0.0278	0.0370	0.0093	0.0093	0.0370
1997	0.0556	0.0278	0.0208	0.0347	0.0417	0.0417	0.0417	0.0556	0.0417	0.0486	0.0347	0.0139
1998	0.0580	0.0145	-	0.0435	0.0435	0.0580	-	0.0435	0.0145	0.0435	0.0145	0.0290
1999	-	0.0294	0.0882	-	-	-	0.1471	-	0.0882	-	0.0588	0.0294
2000	-	0.0667	-	-	-	-	-	-	-	0.0667	-	-
2001	0.0204	-	0.1020	0.0612	0.0204	0.0612	0.0204	0.0612	0.0612	0.0204	0.0204	-
2002	-	0.0417	0.1667	-	-	-	-	0.0417	0.1250	0.0417	-	-
2003	0.0333	-	0.0333	-	-	0.0333	0.0333	0.0333	0.0667	-	-	-
2004	0.0566	0.0377	0.0189	0.0943	0.0189	0.0377	0.0566	-	0.0189	0.0189	0.0377	0.0189
2005	-	-	-	0.0333	0.0333	0.0667	0.0333	0.1000	-	0.0333	0.0667	-
2006	-	-	-	-	-	-	0.0465	0.1163	0.0233	-	-	0.0233
2007	-	0.0357	-	0.0179	-	-	0.0179	-	0.0536	0.0179	0.0536	-
2008	0.0286	0.0286	0.0571	0.0286	0.0571	-	-	-	-	-	-	0.0571
2009	-	-	0.0189	-	-	-	0.0189	0.0377	-	-	0.0189	0.0189
2010	-	-	-	-	0.0116	0.0233	-	-	-	-	-	0.0233
2011	-	-	-	-	-	-	-	-	-	-	-	-
2012	-	0.0500	-	-	-	-	-	-	-	-	-	0.1000

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	57	58	59	60	61	62	63	64	65	66	67
1972	0.0571	-	-	0.0143	-	0.0429	0.0571	0.1143	-	-	0.0286
1973	0.0909	0.0227	0.0227	0.0455	-	0.0227	-	-	-	0.0227	-
1974	0.0289	0.0165	0.0248	0.0124	0.0289	0.0124	0.0083	0.0207	0.0165	0.0207	0.0165
1975	0.0051	0.0102	0.0102	0.0204	-	0.0204	0.0153	0.0153	0.0102	0.0306	0.0255
1976	0.0300	0.0086	0.0172	0.0258	0.0086	0.0300	0.0215	0.0386	0.0215	0.0258	0.0300
1977	0.0574	0.0082	0.0164	0.0328	0.0328	0.0328	0.0164	0.0328	0.0082	0.0082	0.0164
1978	-	0.0196	0.0392	-	0.0196	0.0392	0.0196	-	-	-	-
1979	0.0208	0.0625	0.0417	0.0208	0.0625	0.0417	0.0208	0.0208	0.0417	0.0208	-
1980	0.0556	0.0370	0.0370	-	0.0370	-	0.0185	0.0185	-	-	0.0185
1981	0.0471	0.0118	0.0235	-	0.0824	0.0235	0.0235	0.0471	0.0235	0.0235	-
1982	0.0833	0.0417	0.0417	-	-	0.0417	0.0417	-	-	0.0417	-
1983	-	0.0133	0.0400	0.0133	0.0133	0.0133	0.0267	0.0133	-	0.0267	-
1984	0.0233	0.0465	0.0698	-	-	-	-	-	-	-	0.0233
1985	-	0.0278	0.0139	-	-	0.0278	0.0139	-	-	0.0139	-
1986	-	0.0130	-	-	-	0.0130	0.0260	-	-	-	-
1987	-	-	0.0278	0.0278	0.0278	-	-	-	-	-	-
1988	0.0213	-	-	-	-	-	0.0213	-	-	0.0213	-
1989	0.0392	0.0196	0.0196	0.0196	0.0392	0.0392	0.0196	-	-	0.0196	-
1990	0.1429	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	0.0588	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	0.0093	0.0093	-	0.0278	0.0093	0.0093	0.0093	0.0093	-	0.0185	0.0093
1997	0.0208	0.0347	0.0139	0.0069	0.0486	-	0.0139	-	0.0069	0.0139	0.0069
1998	0.0435	0.0435	0.0290	0.0145	0.0290	-	0.0145	0.0145	0.0145	-	-
1999	-	-	-	0.0294	0.0294	-	0.0588	-	0.0294	-	-
2000	0.0667	-	0.1333	-	0.0667	-	-	0.0667	-	0.0667	-
2001	-	0.0204	0.0408	0.0408	0.0204	-	0.0408	-	-	0.0204	-
2002	-	-	-	-	-	-	-	-	-	-	-
2003	0.0333	0.0667	-	-	-	-	-	0.0333	-	0.0333	-
2004	-	-	0.0189	0.0189	0.0189	0.0377	-	-	0.0189	-	-
2005	-	0.0667	-	0.0333	-	-	-	-	0.0667	0.0667	-
2006	-	-	-	0.0233	-	0.0233	0.0698	0.0698	0.0233	-	-
2007	0.0179	0.0357	-	0.0357	0.0179	0.0536	0.0179	-	0.0179	-	-
2008	0.0286	0.0286	-	0.0286	0.0286	-	-	0.0571	0.0286	-	-
2009	0.0377	0.0189	-	0.0189	0.0377	0.0189	-	0.0377	0.0189	-	-
2010	0.0116	0.0116	-	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-	-	-	-
2012	-	-	-	0.0500	-	-	0.0500	0.0500	-	0.0500	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	68	69	70	71	72	73	74	75	76	77	78	79
1972	0.0429	0.0143	-	0.0286	0.0143	0.0143	-	0.0143	0.0143	0.0143	-	0.0143
1973	0.0227	-	-	-	0.0455	0.0455	-	0.0227	-	-	-	-
1974	0.0083	0.0248	0.0165	0.0207	0.0083	0.0372	0.0207	0.0207	0.0124	0.0248	0.0455	0.0124
1975	0.0102	0.0306	0.0102	0.0306	0.0255	-	0.0408	0.0357	0.0204	0.0153	0.0255	0.0051
1976	0.0172	0.0215	0.0215	0.0086	0.0129	0.0172	0.0043	0.0043	0.0086	0.0129	0.0043	0.0086
1977	0.0246	0.0164	0.0082	-	0.0082	-	0.0082	-	-	0.0246	0.0082	-
1978	0.0392	0.0196	-	-	-	-	-	-	-	-	-	-
1979	-	-	0.0208	-	-	-	0.0417	0.0208	-	-	-	-
1980	0.0185	0.0185	0.0556	-	-	0.0370	-	-	-	0.0185	-	0.0370
1981	-	-	-	0.0118	0.0118	-	0.0118	0.0118	-	-	-	-
1982	-	-	-	0.0417	-	0.0833	-	0.0417	-	-	-	-
1983	-	0.0133	-	-	0.0133	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	0.0233	0.0233	-
1985	-	-	-	-	-	-	0.0278	0.0278	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	0.0392	0.0196	-	0.0196	-	-	0.0196	-	-	-	0.0196	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	0.1000	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	0.0588	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-
1996	0.0093	0.0093	0.0093	0.0278	0.0185	0.0185	0.0093	-	-	0.0185	-	-
1997	0.0069	-	0.0069	0.0139	0.0139	-	0.0069	-	0.0069	0.0069	-	0.0069
1998	0.0145	-	-	-	-	0.0435	0.0145	-	0.0145	-	0.0145	-
1999	-	0.0294	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	0.0204	-	-	0.0204	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	0.0417
2003	-	-	0.0333	-	-	-	-	-	0.0333	-	0.0333	-
2004	-	-	-	-	-	-	0.0189	-	-	-	-	-
2005	-	0.0333	-	-	-	-	-	-	0.0333	-	-	-
2006	0.0233	0.0233	0.0698	0.0465	0.0465	0.0465	0.0233	-	0.0465	-	0.0233	0.0233
2007	-	-	-	-	-	-	-	-	-	-	-	-
2008	0.0857	0.0857	-	0.0286	-	-	-	-	-	-	-	-
2009	0.0189	0.0189	-	0.0377	-	-	0.0189	-	0.0377	-	-	-
2010	-	0.0233	-	-	0.0116	0.0116	-	0.0116	0.0116	-	-	0.0116
2011	-	-	-	-	-	-	-	-	-	-	-	-
2012	0.0500	-	-	-	-	-	-	-	-	-	-	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	80	81	82	83	84	85	86	87	88	89	90	91	92
1972	0.0143	0.0143	-	0.0143	0.0286	0.0286	0.0429	0.0286	-	-	0.0286	0.0143	0.0143
1973	-	-	0.0227	-	-	0.0227	0.0227	0.0227	0.0227	-	-	0.0455	0.0227
1974	0.0124	0.0165	0.0331	0.0124	0.0207	0.0083	0.0207	0.0041	0.0207	0.0041	0.0041	0.0083	0.0041
1975	0.0153	0.0153	-	0.0204	0.0153	0.0102	0.0102	0.0102	0.0357	0.0153	-	0.0051	0.0153
1976	0.0129	0.0043	0.0086	0.0043	0.0086	0.0129	-	0.0086	0.0086	0.0043	0.0086	0.0043	0.0086
1977	-	-	0.0082	-	-	-	0.0082	-	-	-	0.0082	-	-
1978	-	-	-	-	-	-	-	-	-	-	-	-	-
1979	-	-	0.0208	-	-	0.0417	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	0.0185	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	0.0417	-	-	-	-	-	-	-
1983	-	-	-	0.0133	0.0267	-	-	-	-	-	-	0.0133	-
1984	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	0.0139	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	0.0130	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	0.0213	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	0.0093	-	-	-	-	0.0093	-	-	-	-	-
1997	0.0069	-	-	0.0069	-	-	-	-	-	-	-	-	-
1998	0.0290	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	0.0294	-	-	-	-	-	-
2000	0.0667	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	0.0417	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	0.0333	-	-	-	-
2006	0.0233	0.0233	-	0.0465	-	-	-	-	-	0.0233	-	-	-
2007	-	-	-	-	0.0179	0.0357	0.0179	-	0.0179	0.0179	-	0.0536	-
2008	0.0286	-	-	-	-	-	-	0.0857	-	-	-	-	-
2009	-	0.0566	-	0.0189	0.0755	0.0377	0.0377	0.0189	0.0189	0.0189	-	0.0377	0.0189
2010	-	0.0233	-	0.0233	0.0581	0.0814	0.0465	0.0233	-	0.0465	0.0349	0.0349	0.0349
2011	-	-	-	-	0.3333	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-	-	0.0500	0.0500	0.1000	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	93	94	95	96	97	98	99	100	101	102	103	104
1972	-	-	0.0286	0.0143	-	0.0143	-	-	-	-	-	-
1973	-	-	-	-	-	-	-	-	-	-	-	-
1974	0.0083	0.0041	-	-	-	0.0041	0.0041	0.0041	-	-	-	-
1975	0.0051	-	0.0051	0.0051	-	-	-	0.0102	0.0102	-	0.0051	-
1976	-	0.0043	0.0086	-	-	0.0043	-	-	-	-	-	0.0086
1977	-	-	0.0082	-	-	0.0082	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-	-	-	-
1980	0.0185	-	-	0.0185	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-	-	-	-	-
1983	-	0.0133	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-
1996	0.0093	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1998	0.0145	0.0290	-	-	0.0145	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	0.0233	-	-	-	-	-	-	-
2007	0.0357	-	0.0179	0.0179	-	-	-	-	-	0.0179	-	-
2008	-	-	-	-	-	-	-	-	-	-	-	-
2009	0.0189	-	-	-	-	-	-	0.0189	-	-	0.0189	-
2010	0.0233	0.0349	0.0233	0.0116	0.0233	-	0.0349	-	0.0116	-	0.0116	0.0233
2011	-	-	-	-	-	-	-	-	-	-	-	-
2012	-	-	-	-	0.0500	-	-	0.0500	-	-	-	-

Table 9 (continued). Nominal length composition (TL in cm) for recreational snowy grouper (SRHS and MRFSS/MRIP samples).

Year	105	106	107	108	109	110	111	112	113	114	115
1972	-	-	-	-	-	-	-	-	-	-	-
1973	-	-	-	-	0.0227	-	-	-	-	-	-
1974	-	-	-	-	-	-	-	-	0.0041	-	-
1975	-	-	-	-	0.0051	-	-	-	-	-	-
1976	-	0.0043	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	0.0145	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-
2007	0.0179	-	-	-	0.0357	-	0.0357	0.0357	-	-	0.0357
2008	-	-	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	0.0189	-	0.0377	0.0189
2010	0.0116	0.0116	0.0233	-	0.0116	0.0116	-	0.0233	-	0.0116	0.0116
2011	-	-	-	-	-	-	-	-	-	-	-
2012	-	-	0.0500	0.0500	-	-	-	0.0500	-	-	-

Table 10: Nominal age composition (number of annuli) for recreational snowy grouper.

year	n.fish	n.trips	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1980	21	7	-	-	0.0952	0.1429	0.1429	0.1905	0.381	0.0476	-	-	-	-	0	
1981	45	9	-	0.0444	-	0.1111	0.0889	0.3111	0.1778	0.1111	0.0222	0.0889	0.0444	-	0	
1982	1	1	-	-	1	-	-	-	-	-	-	-	-	-	0	
1983	17	9	-	-	0.1176	0.0588	0.2941	0.1176	0.2941	-	-	-	-	-	0.0588 0.0588	
1984	11	4	-	-	0.2727	0.1818	0.1818	-	0.1818	0.0909	0.0909	-	-	-	0	
1985	6	6	0.1667	0.3333	-	0.3333	-	0.1667	-	-	-	-	-	-	0	
1986	18	9	0.0556	0.1667	0.2222	0.2222	0.1667	0.1667	-	-	-	-	-	-	0	
1987	1	1	-	-	1	-	-	-	-	-	-	-	-	-	0	
1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
1989	15	6	-	0.1333	0.3333	0.2	0.2667	-	0.0667	-	-	-	-	-	0	
1990	4	4	-	-	0.5	0.25	-	-	0.25	-	-	-	-	-	0	
1991	2	2	-	-	0.5	0.5	-	-	-	-	-	-	-	-	0	
1992	1	1	-	1	-	-	-	-	-	-	-	-	-	-	0	
1993	4	4	0.25	0.5	0.25	-	-	-	-	-	-	-	-	-	0	
1994	3	2	-	0.6667	0.3333	-	-	-	-	-	-	-	-	-	0	
1995	1	1	-	1	-	-	-	-	-	-	-	-	-	-	0	
1996	7	5	0.1429	0.2857	0.2857	0.1429	-	-	0.1429	-	-	-	-	-	0	
1997	2	2	-	0.5	-	-	-	-	-	-	0.5	-	-	-	0	
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
2002	4	2	-	-	-	-	0.5	-	0.25	0.25	-	-	-	-	0	
2003	185	13	-	0.0324	0.2162	0.4432	0.2054	0.0649	0.0162	0.0108	-	0.0054	-	-	0.0054	
2004	62	16	-	0.0484	0.1613	0.3871	0.0806	0.2258	0.0806	0.0161	-	-	-	-	0	
2005	5	5	-	0.2	0.8	-	-	-	-	-	-	-	-	-	0	
2006	19	5	0.0526	-	-	0.2632	0.1579	0.1579	-	0.1579	0.0526	-	0.0526	-	0.1052	
2007	7	5	0.1429	0.1429	0.2857	0.2857	0.1429	-	-	-	-	-	-	-	0	
2008	13	7	-	-	0.0769	0.1538	0.0769	-	0.3077	0.1538	0.1538	-	0.0769	-	0	
2009	8	1	0.125	0.125	0.25	0.125	-	-	0.125	0.125	0.125	-	-	-	0	
2010	8	2	0.375	0.375	0.25	-	-	-	-	-	-	-	-	-	0	
2011	2	1	-	1	-	-	-	-	-	-	-	-	-	-	0	
2012	2	2	-	-	-	0.5	-	-	-	0.5	-	-	-	-	0	

## Figures

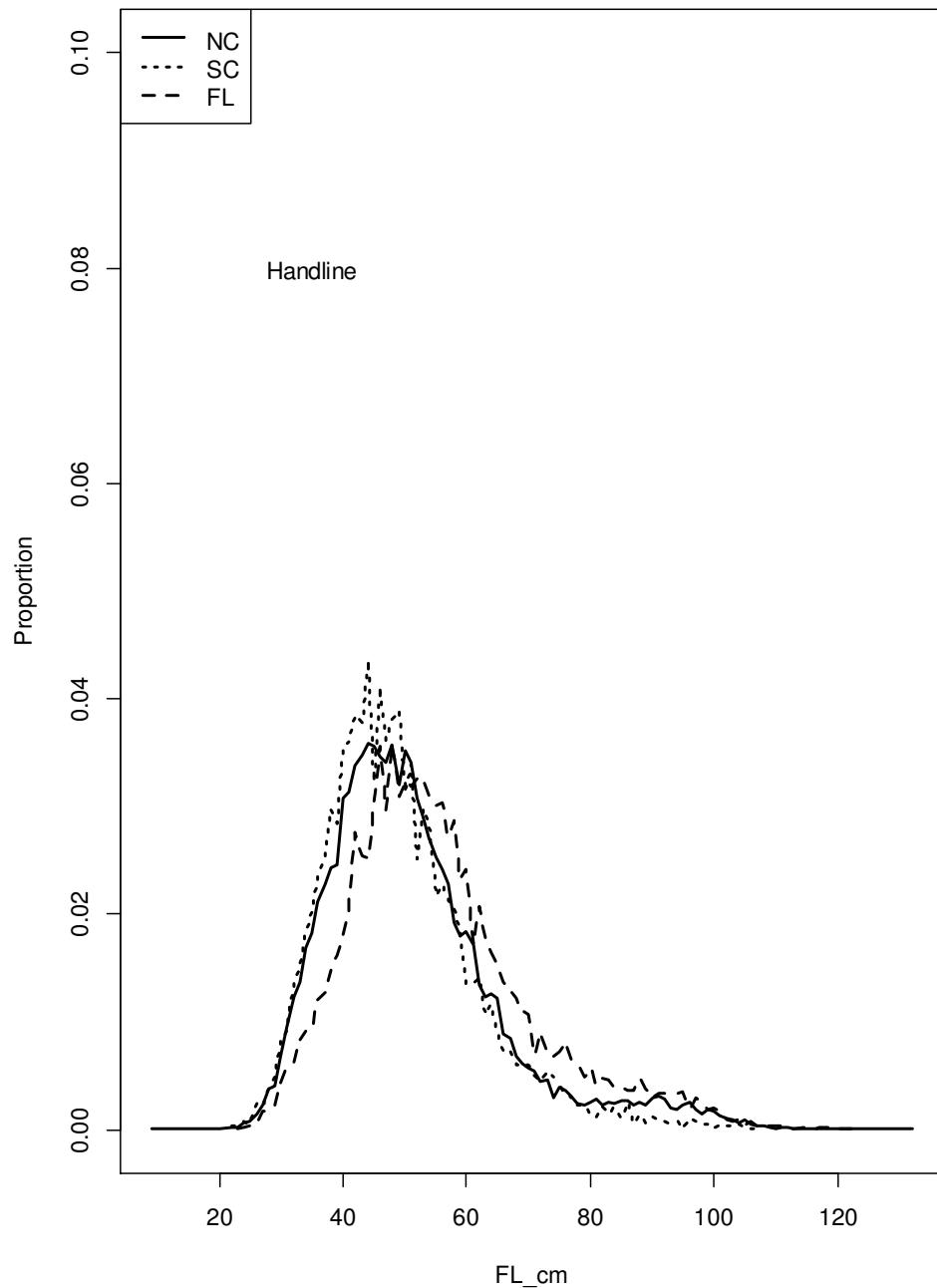


Figure 1. Length composition of snowy grouper by state/region for all years for the commercial handline gear.

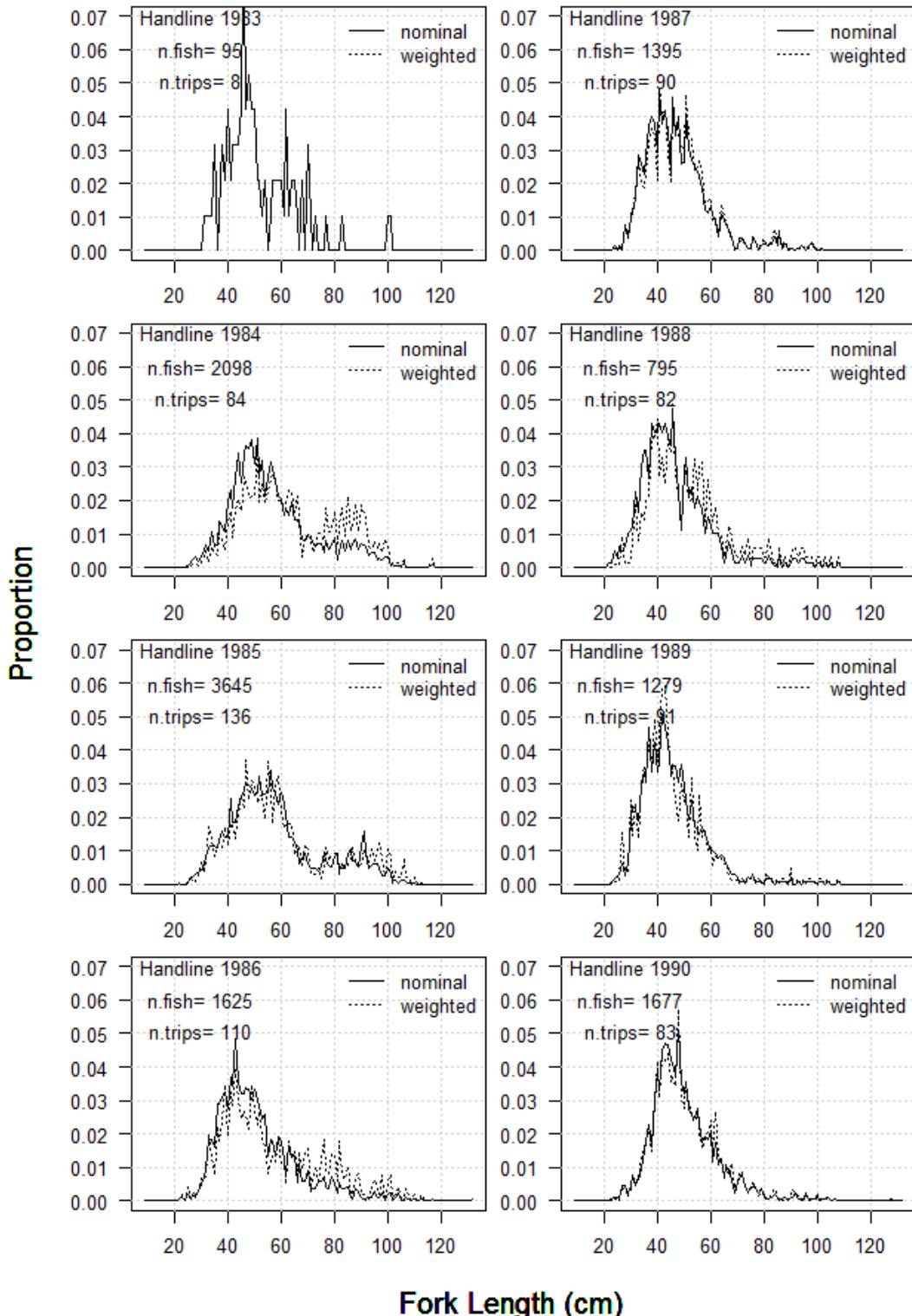


Figure 2. Weighted and un-weighted snowy grouper length composition for handline gear by year.

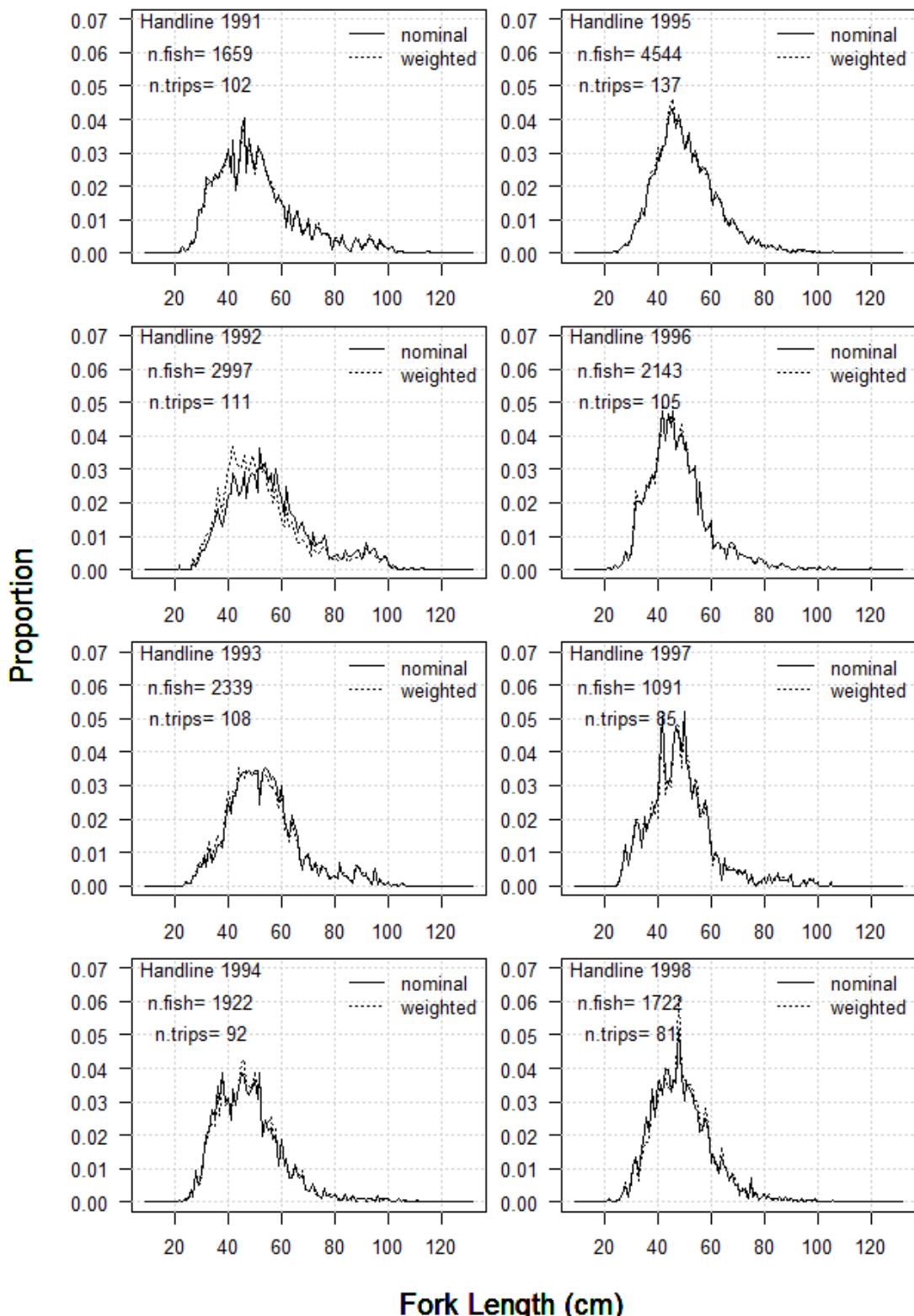


Figure 2 (continued).

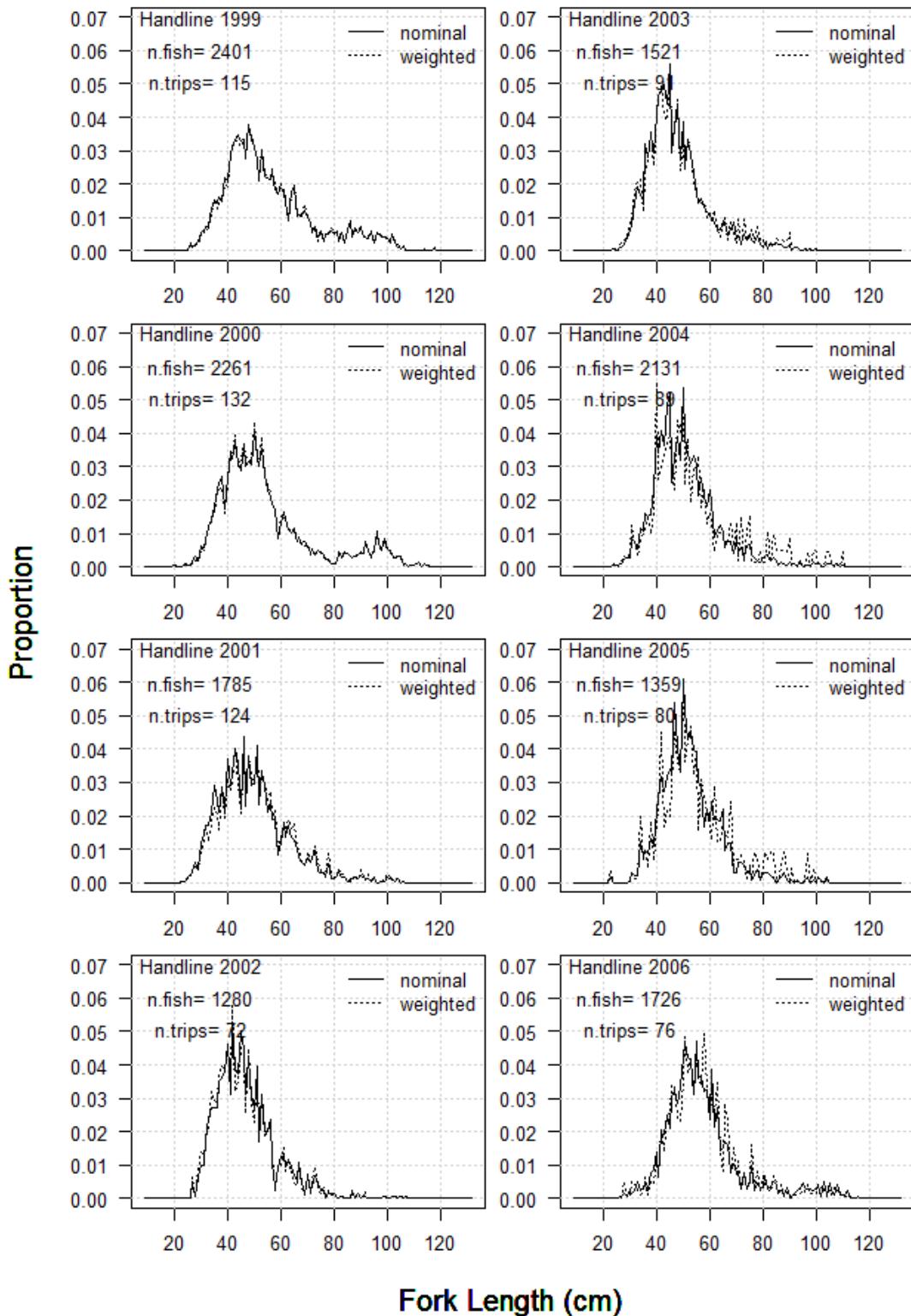


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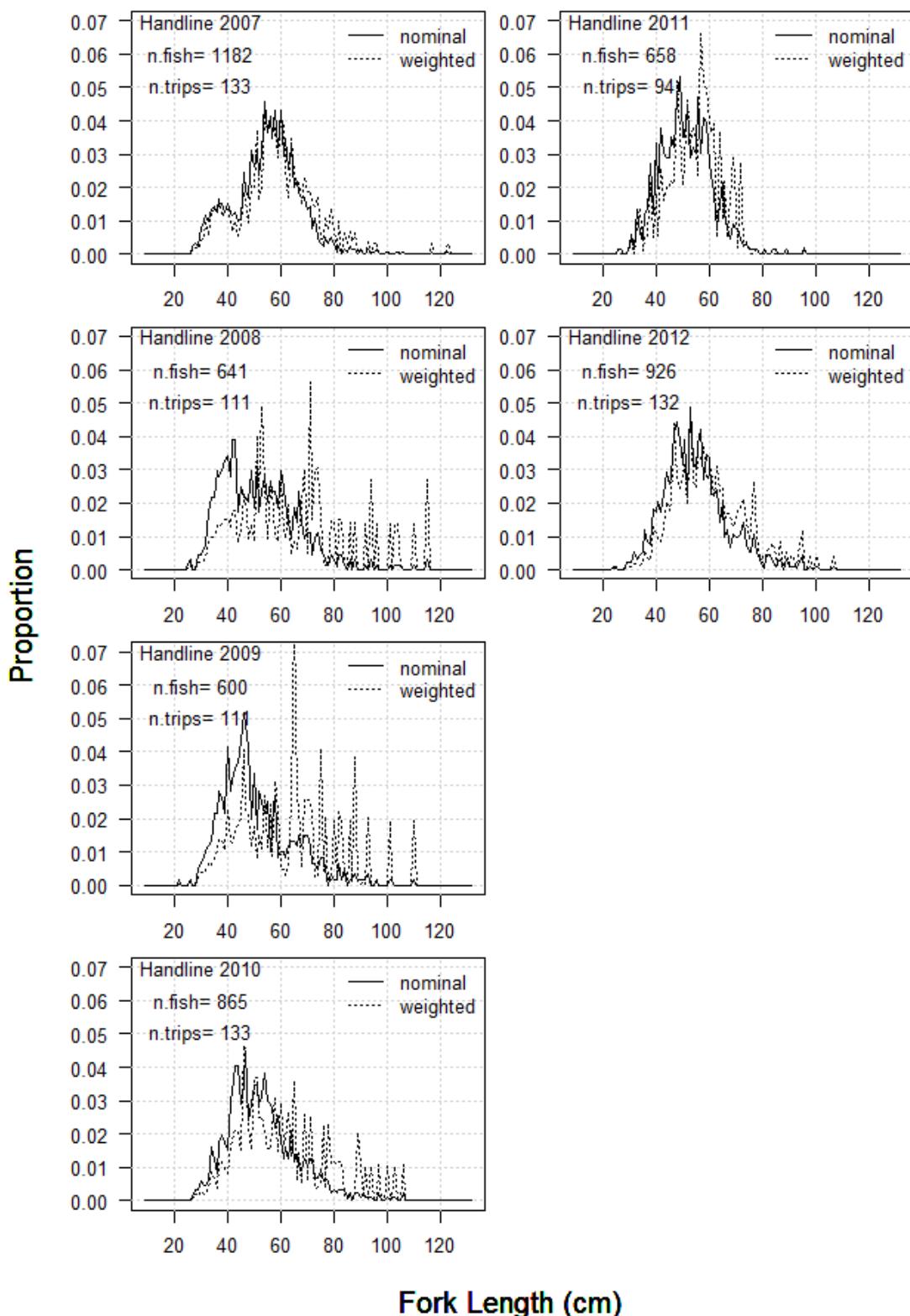


Figure 2 (continued).

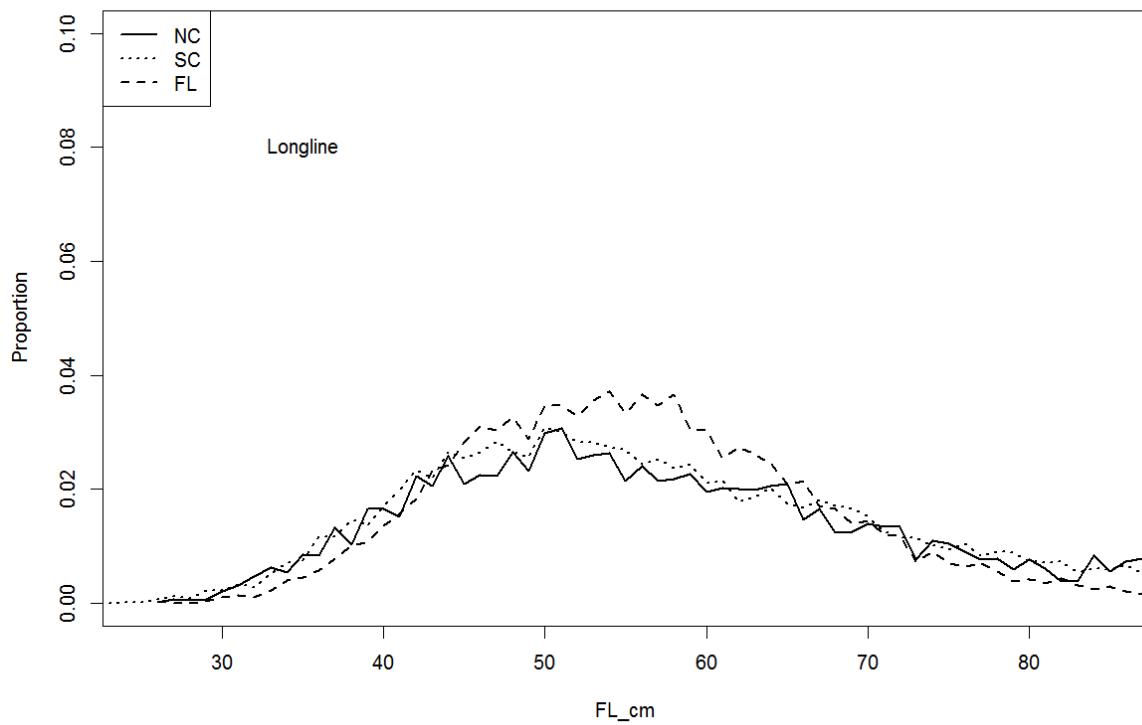


Figure 3. Length composition of snowy grouper by state/region for all years for the commercial longline gear.

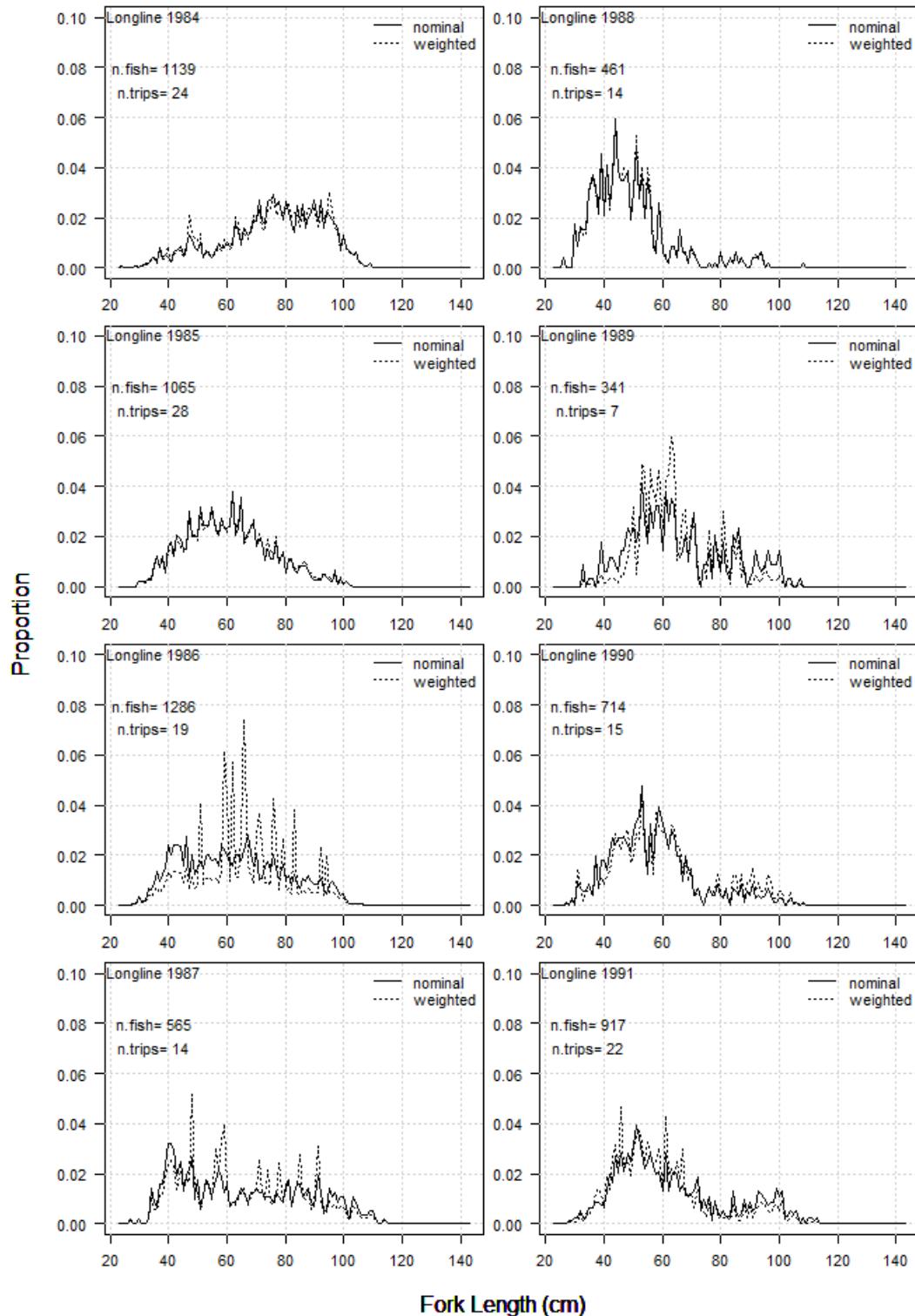


Figure 4. Weighted and un-weighted snowy grouper length composition for longline gear by year.

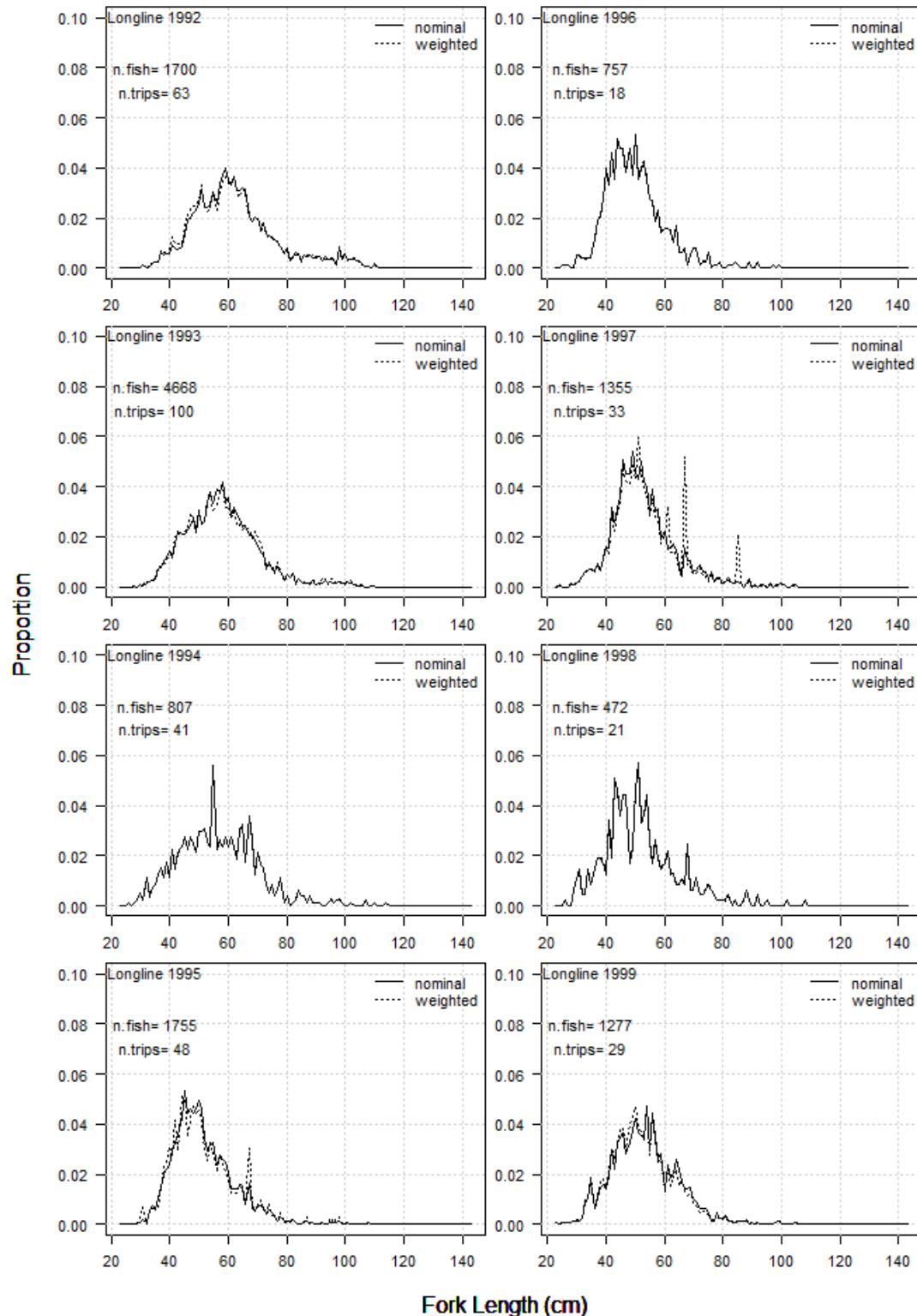


Figure 4 (continued).

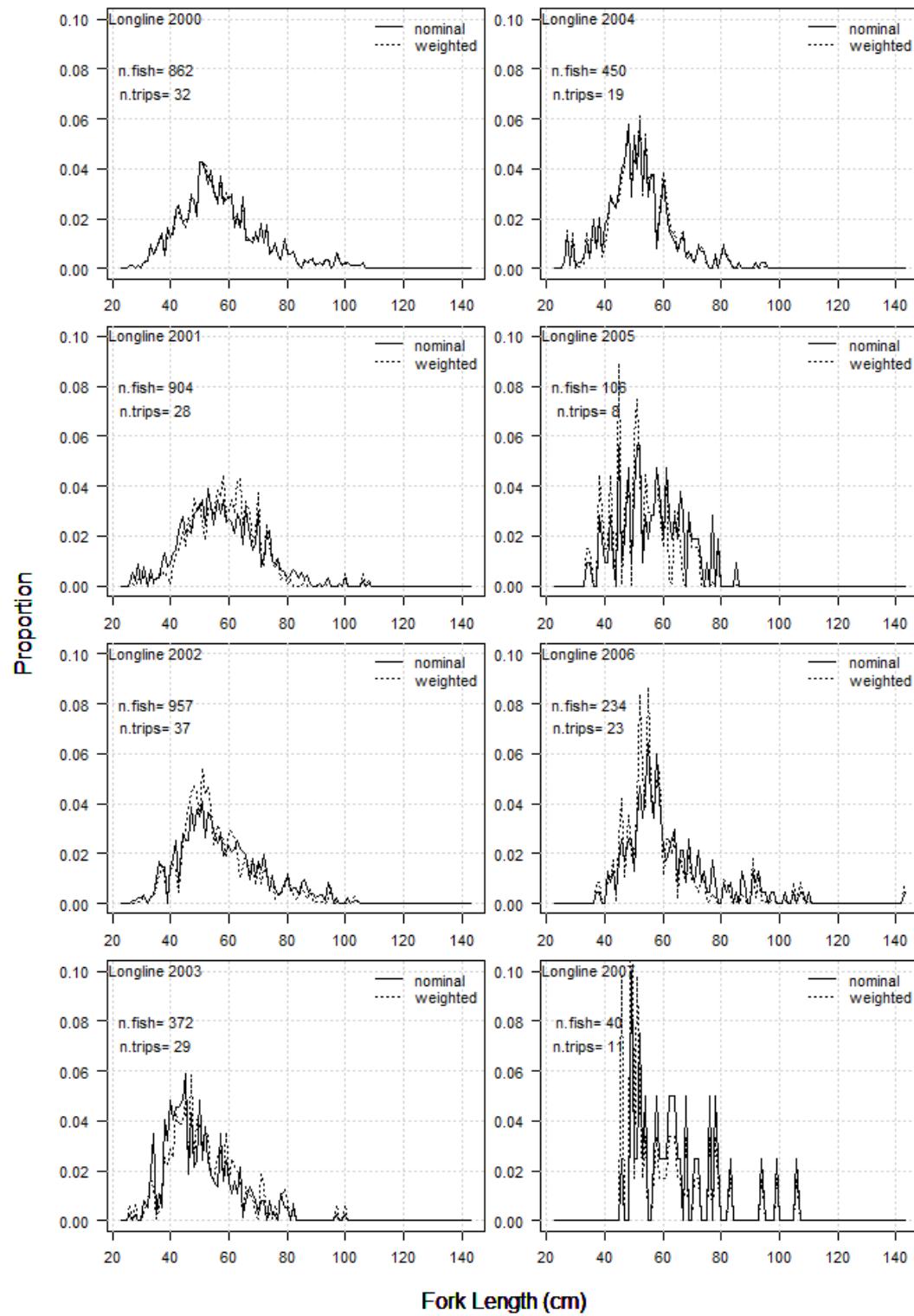


Figure 4 (continued).

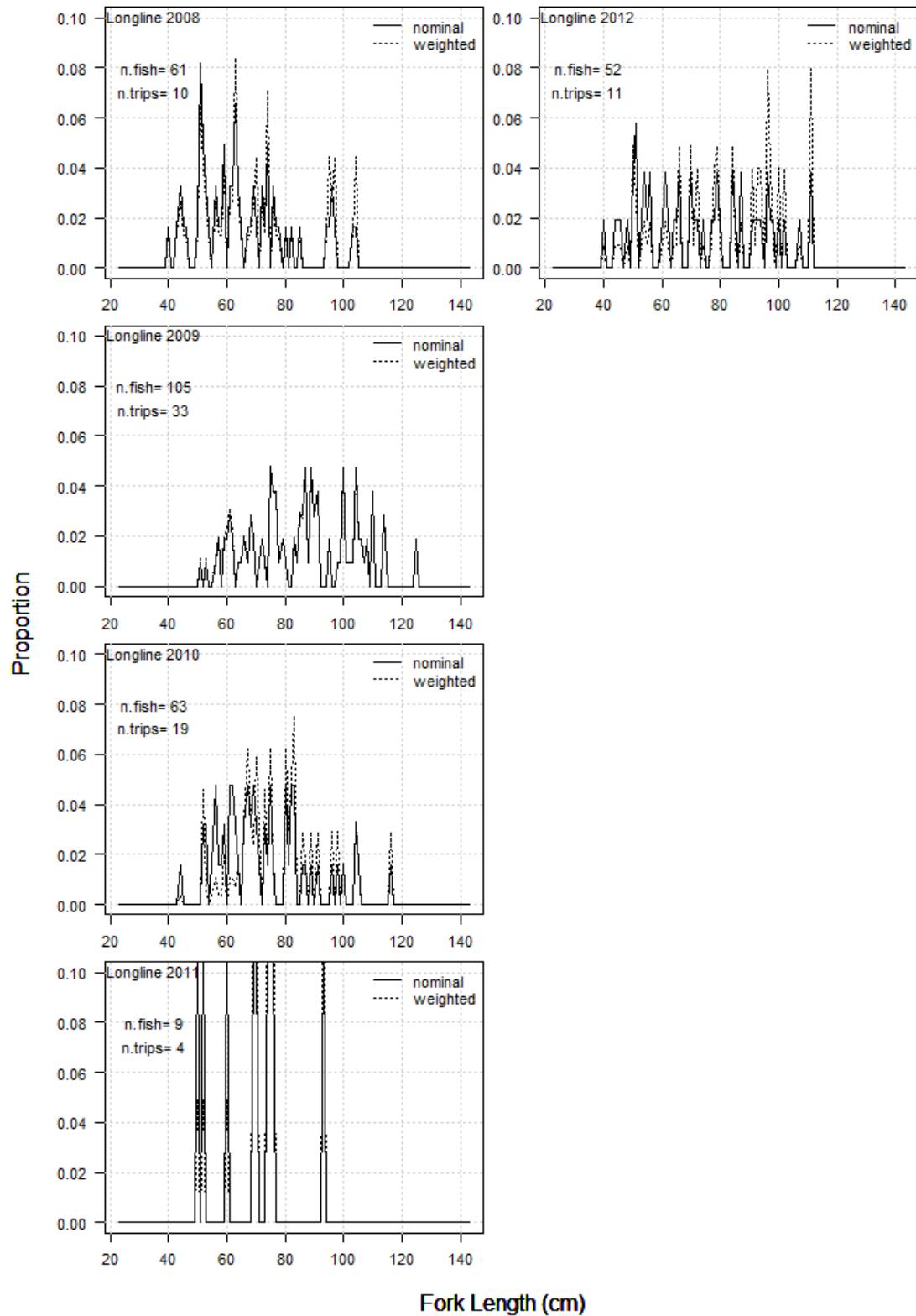


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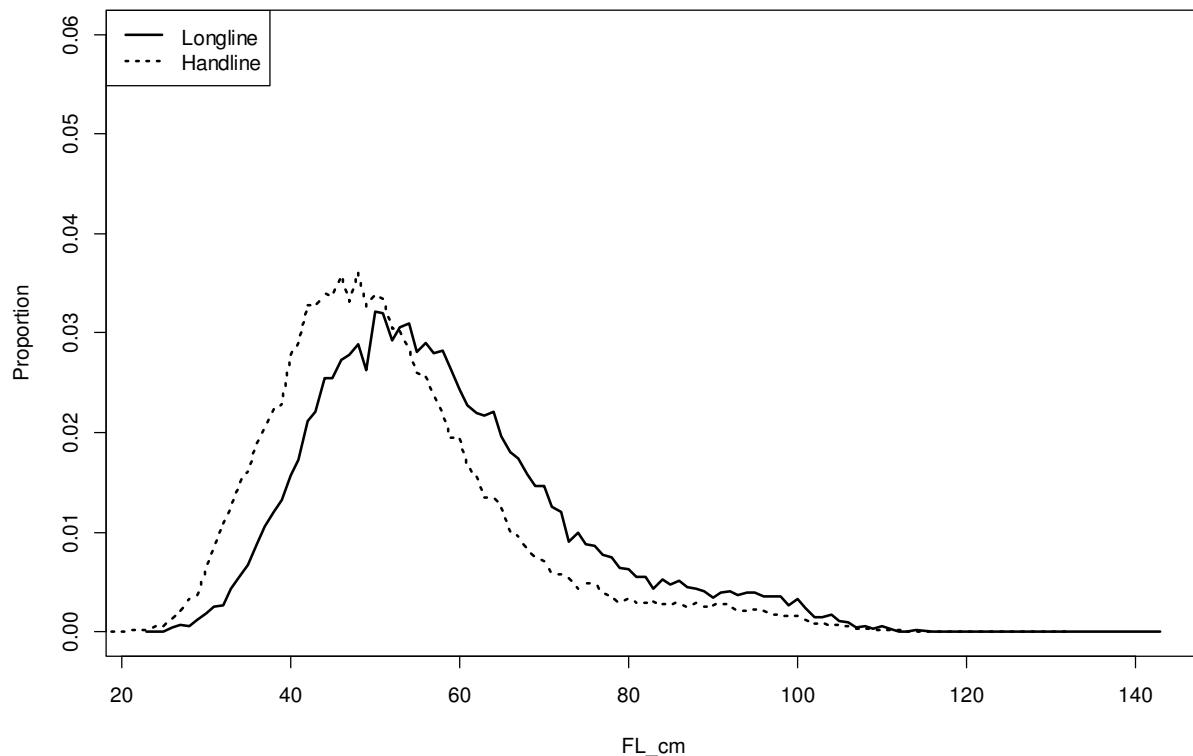


Figure 5. Length composition of snowy grouper by fleet for all years for the commercial gears.

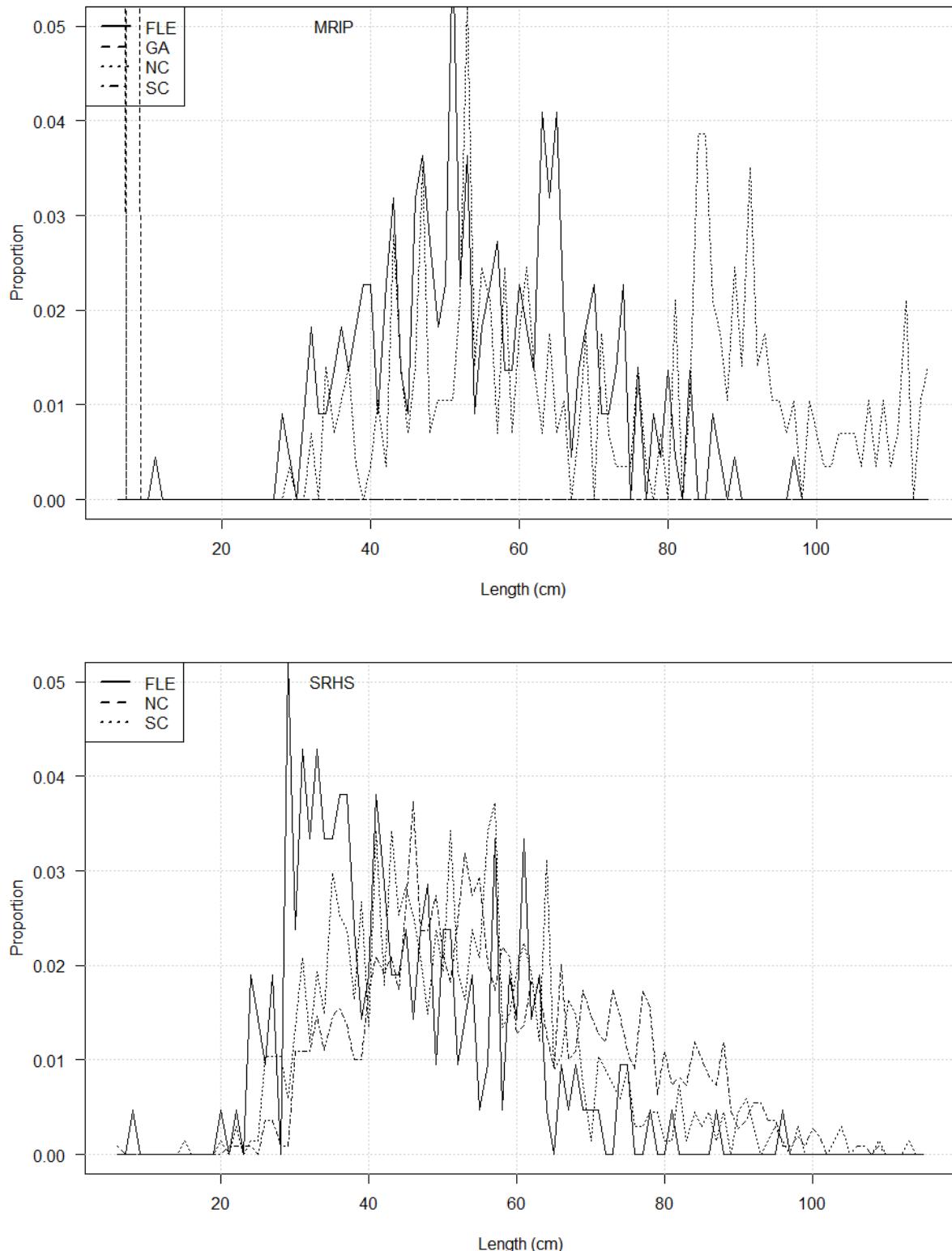


Figure 6. Length composition of snowy grouper by state/region for all years for the MRFSS/MRIP and SRHS.

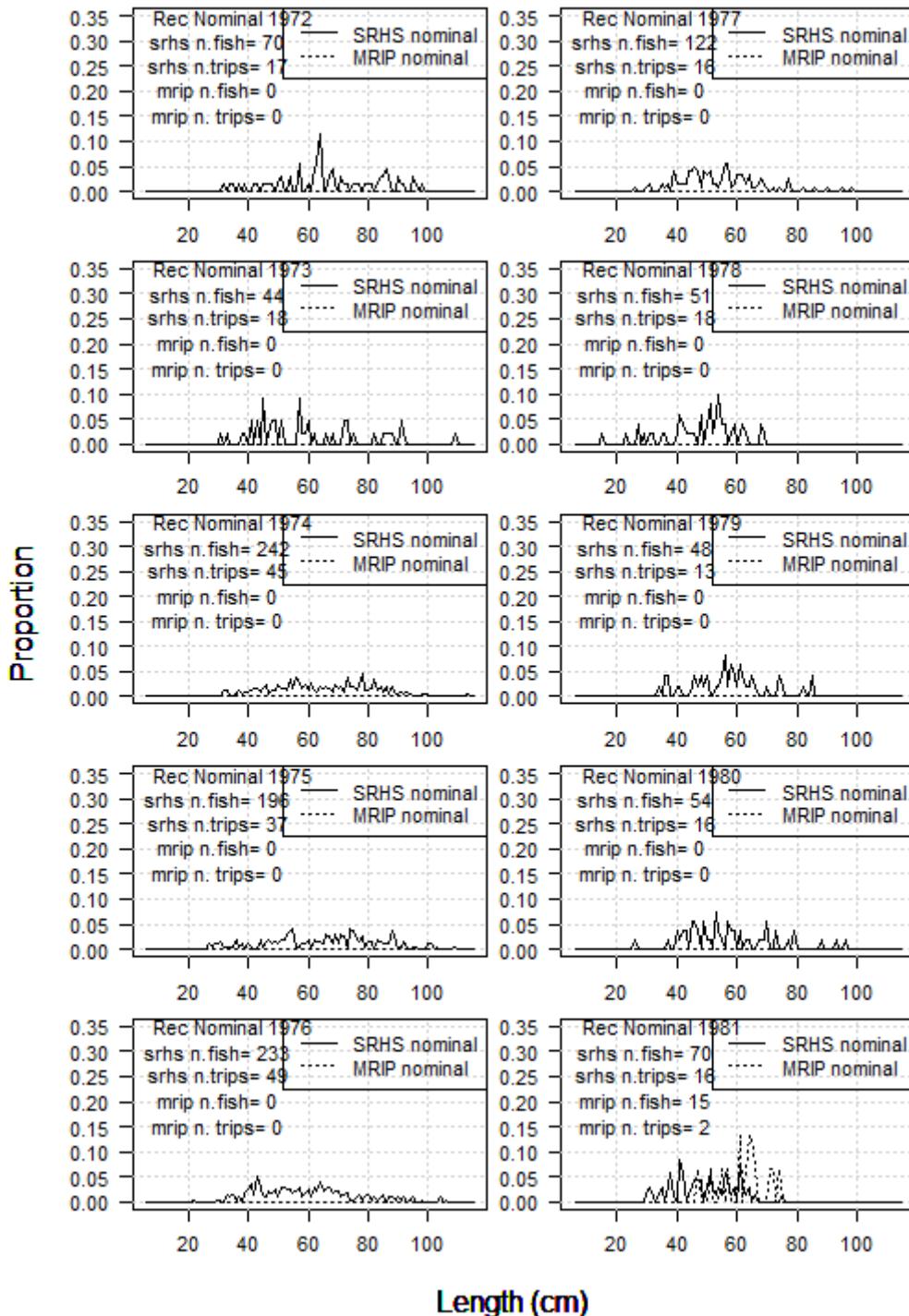


Figure 7. Nominal snowy grouper length composition for the SRHS and MRFSS/MRIP by year (1972-2012).

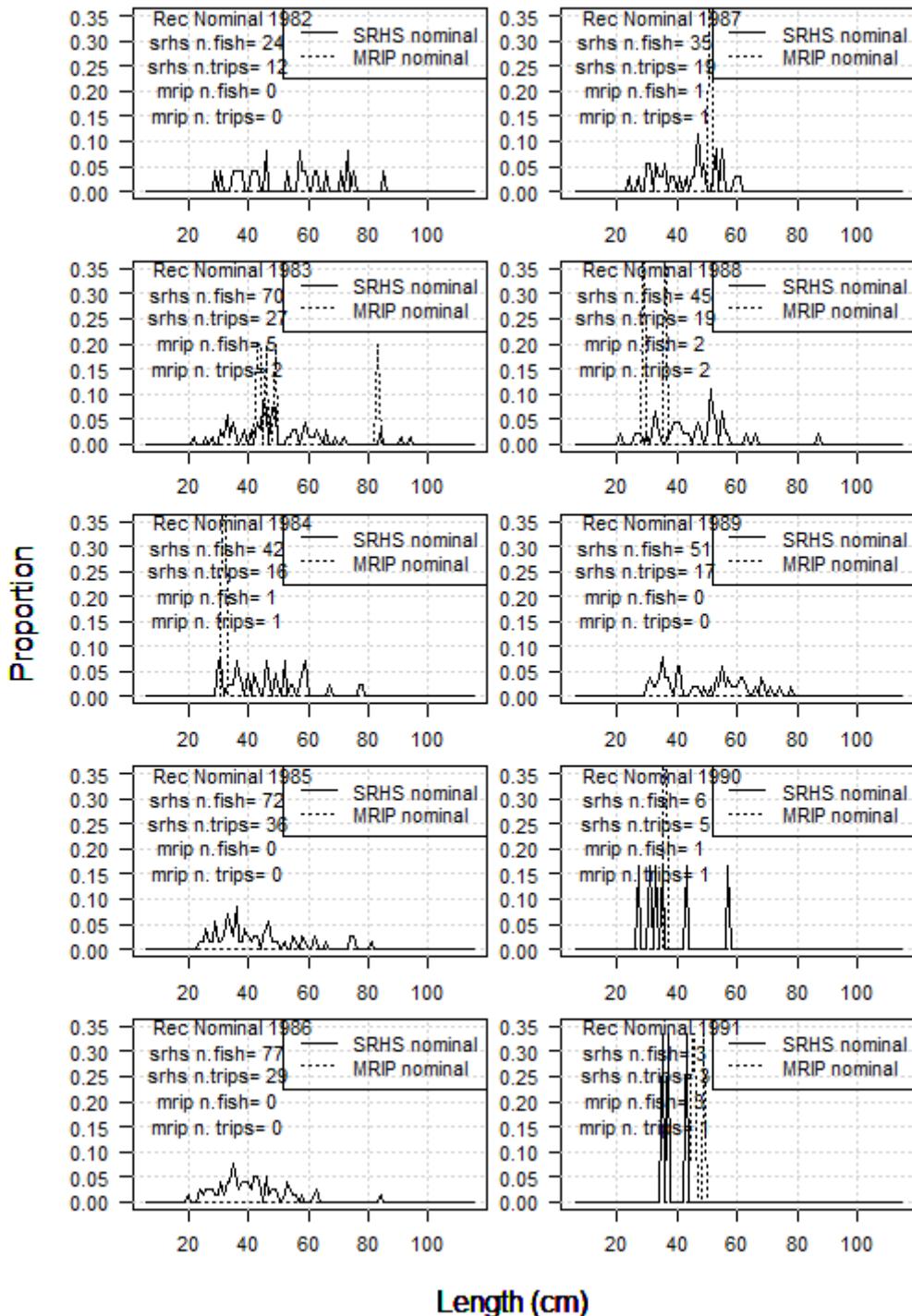


Figure 7 (continued). Nominal snowy grouper length composition for the SRHS and MRFSS/MRIP by year (1972-2012).

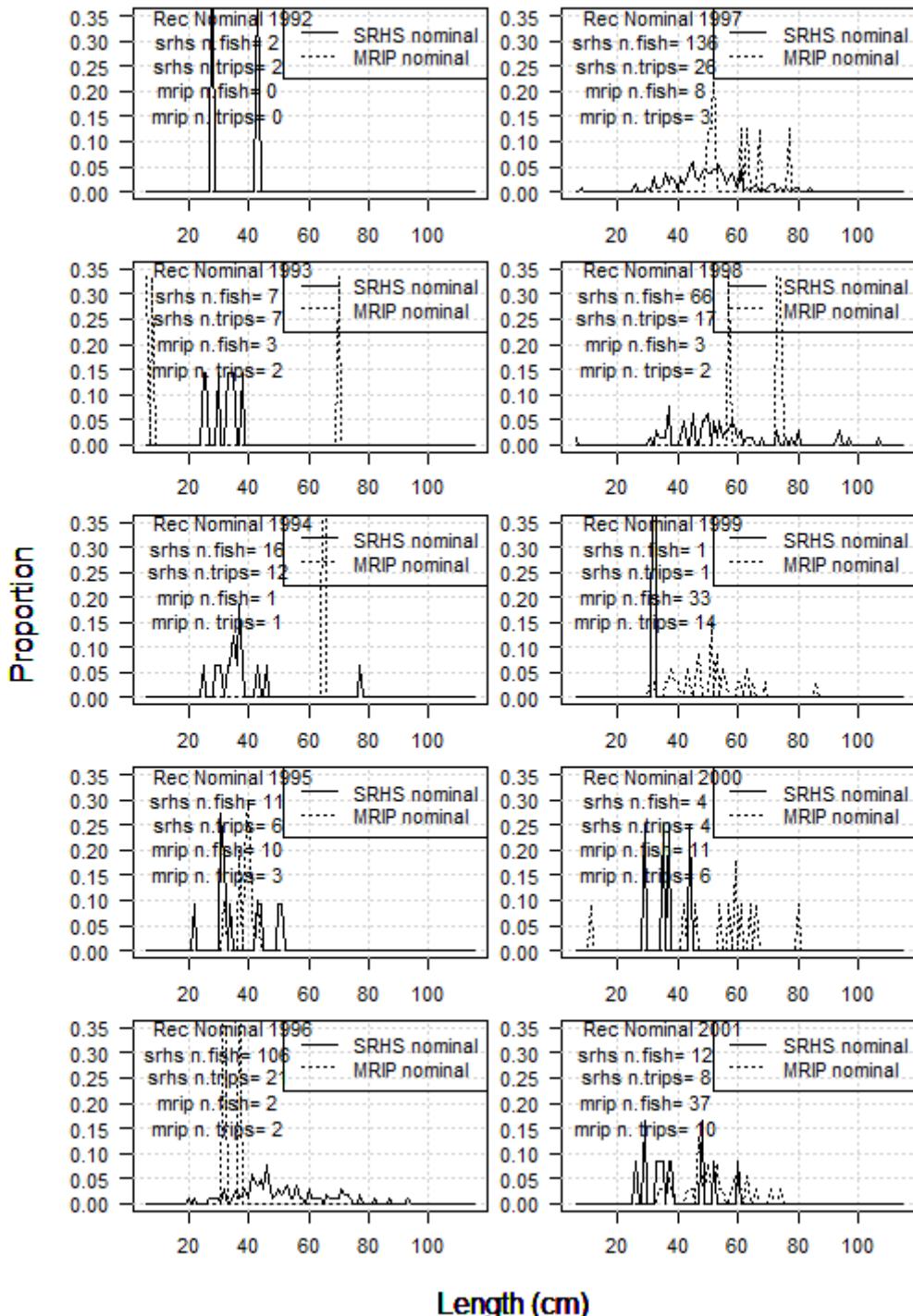


Figure 7 (continued). Nominal snowy grouper length composition for the SRHS and MRFSS/MRIP by year (1972-2012).

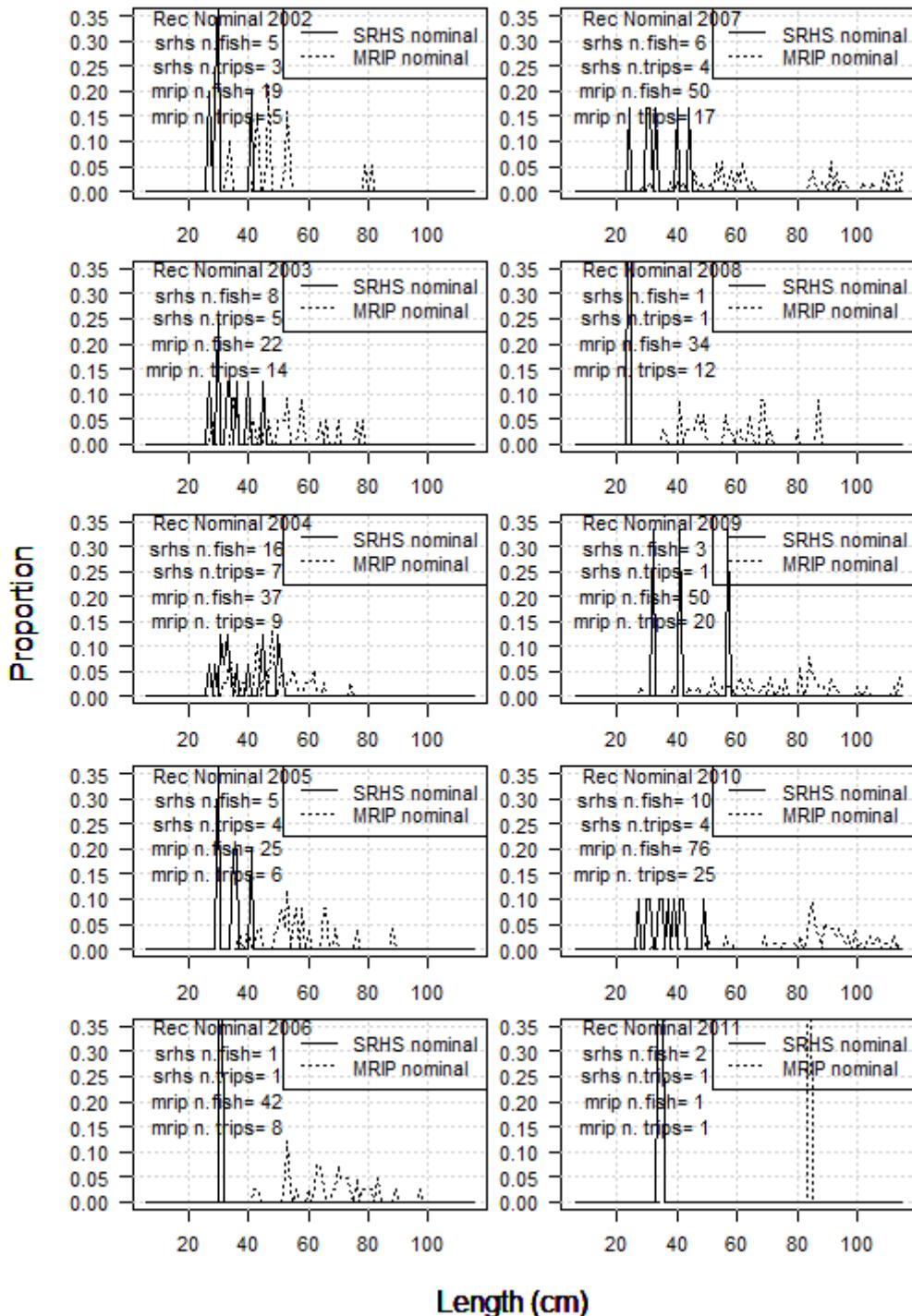


Figure 7 (continued). Nominal snowy grouper length composition for the SRHS and MRFSS/MRIP by year (1972-2012).

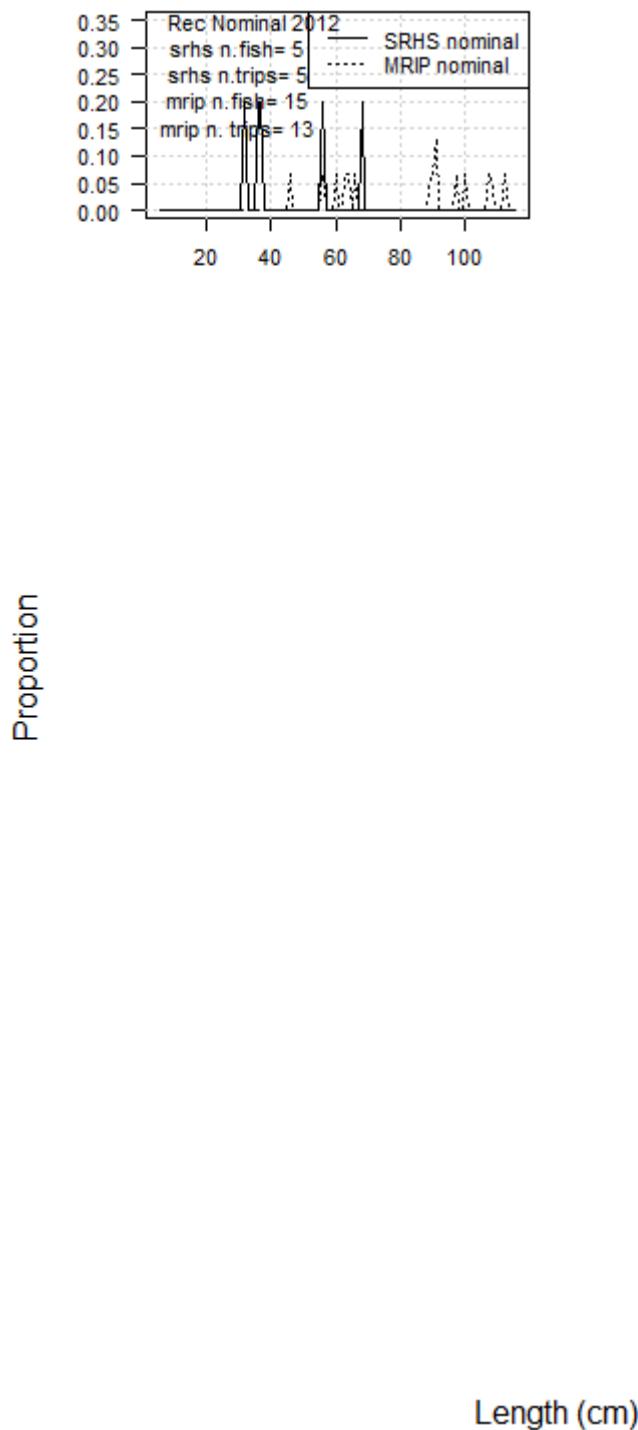


Figure 7 (continued). Nominal snowy grouper length composition for the SRHS and MRFSS/MRIP by year (1972-2012).

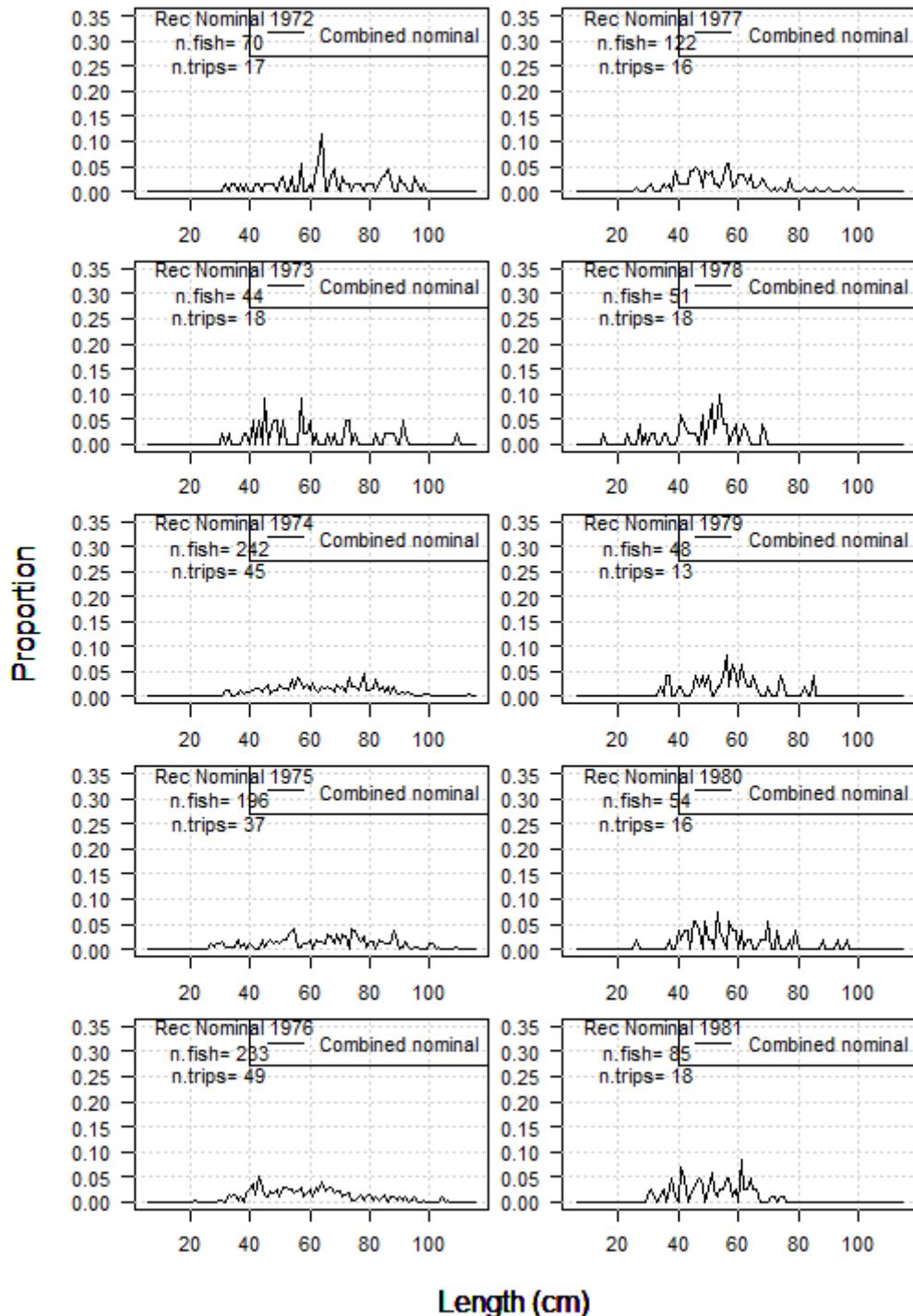


Figure 8. Nominal snowy grouper length composition for the recreational fishery by year (1972-2012).

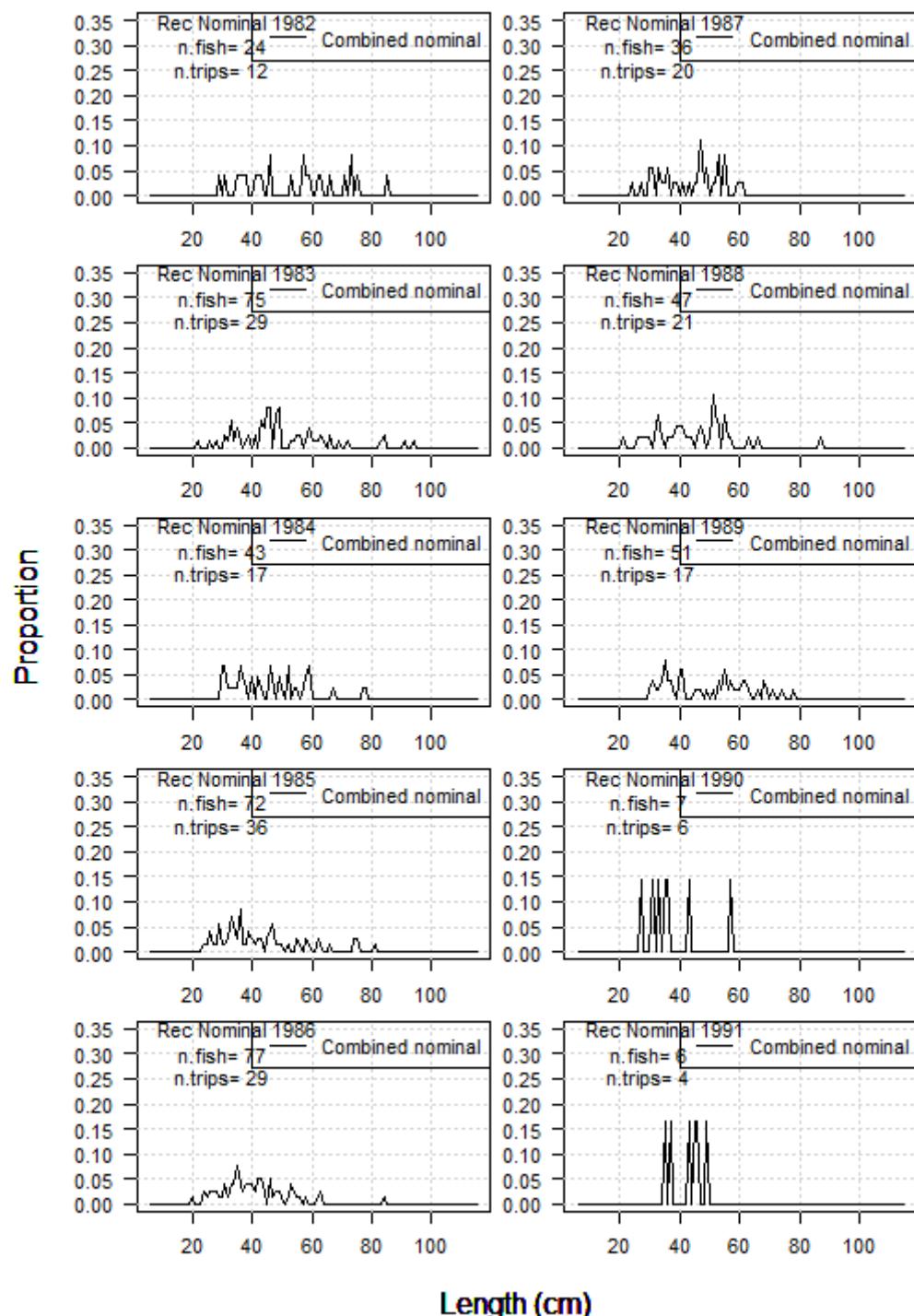


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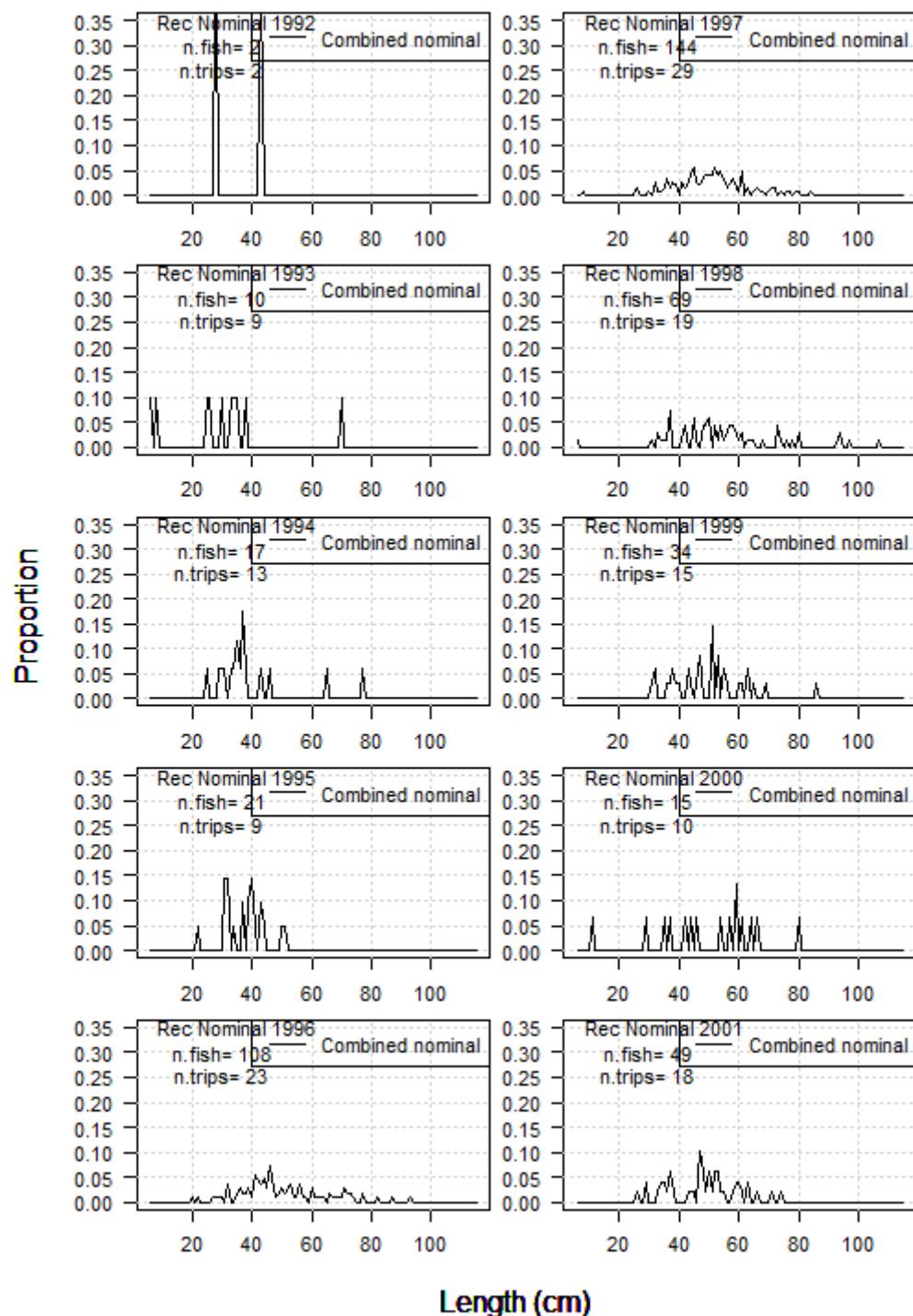


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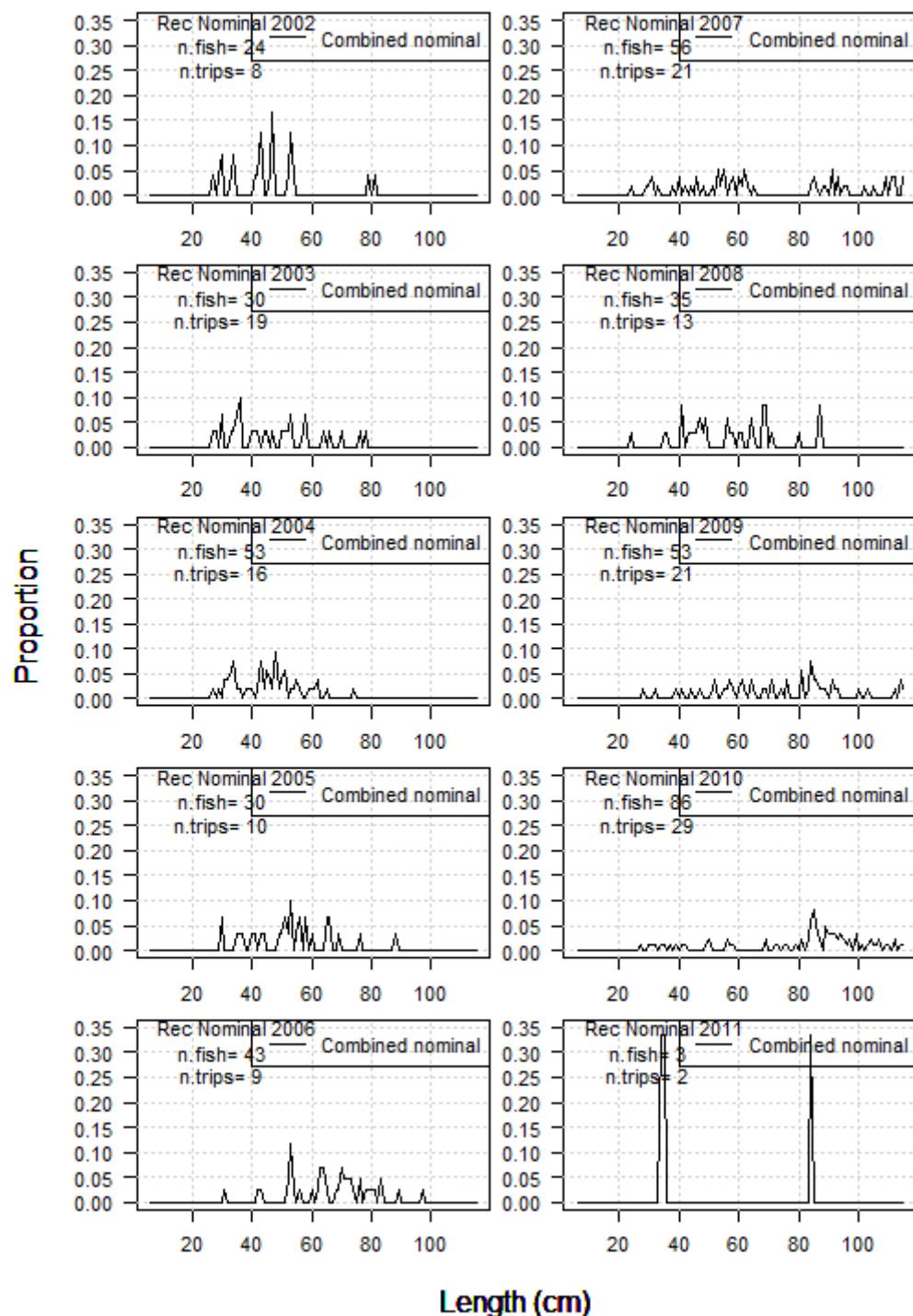


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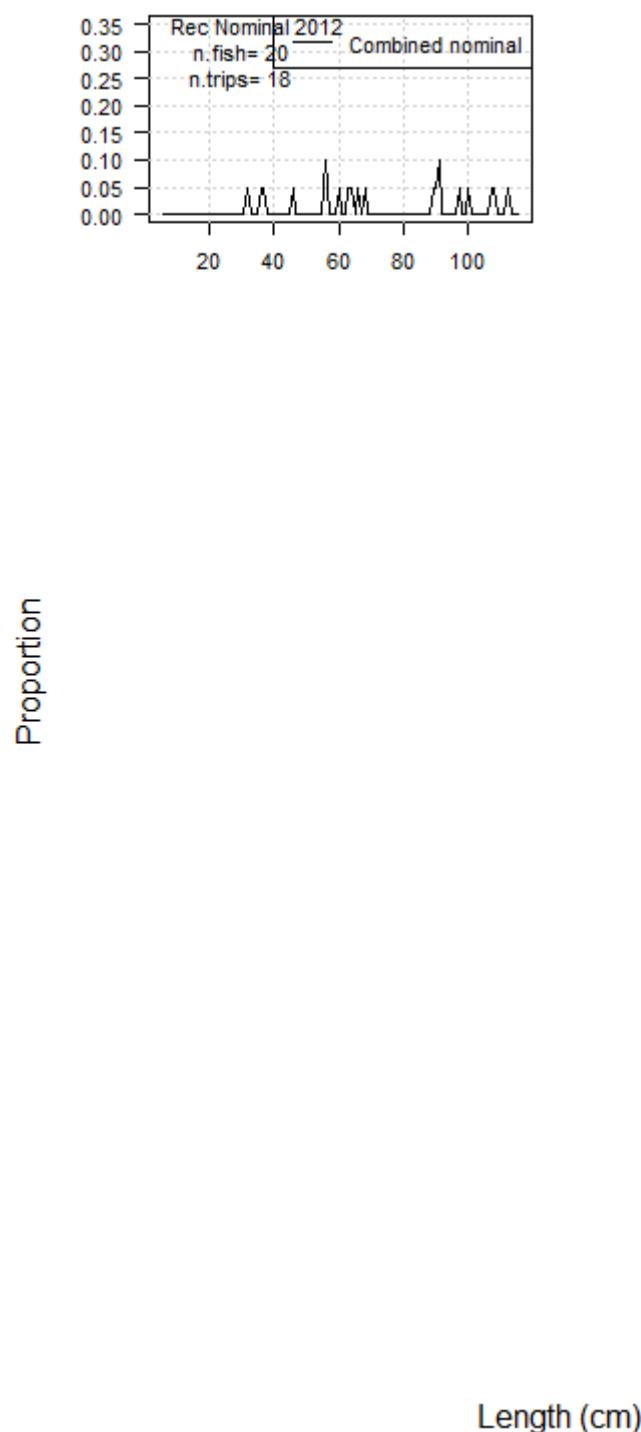


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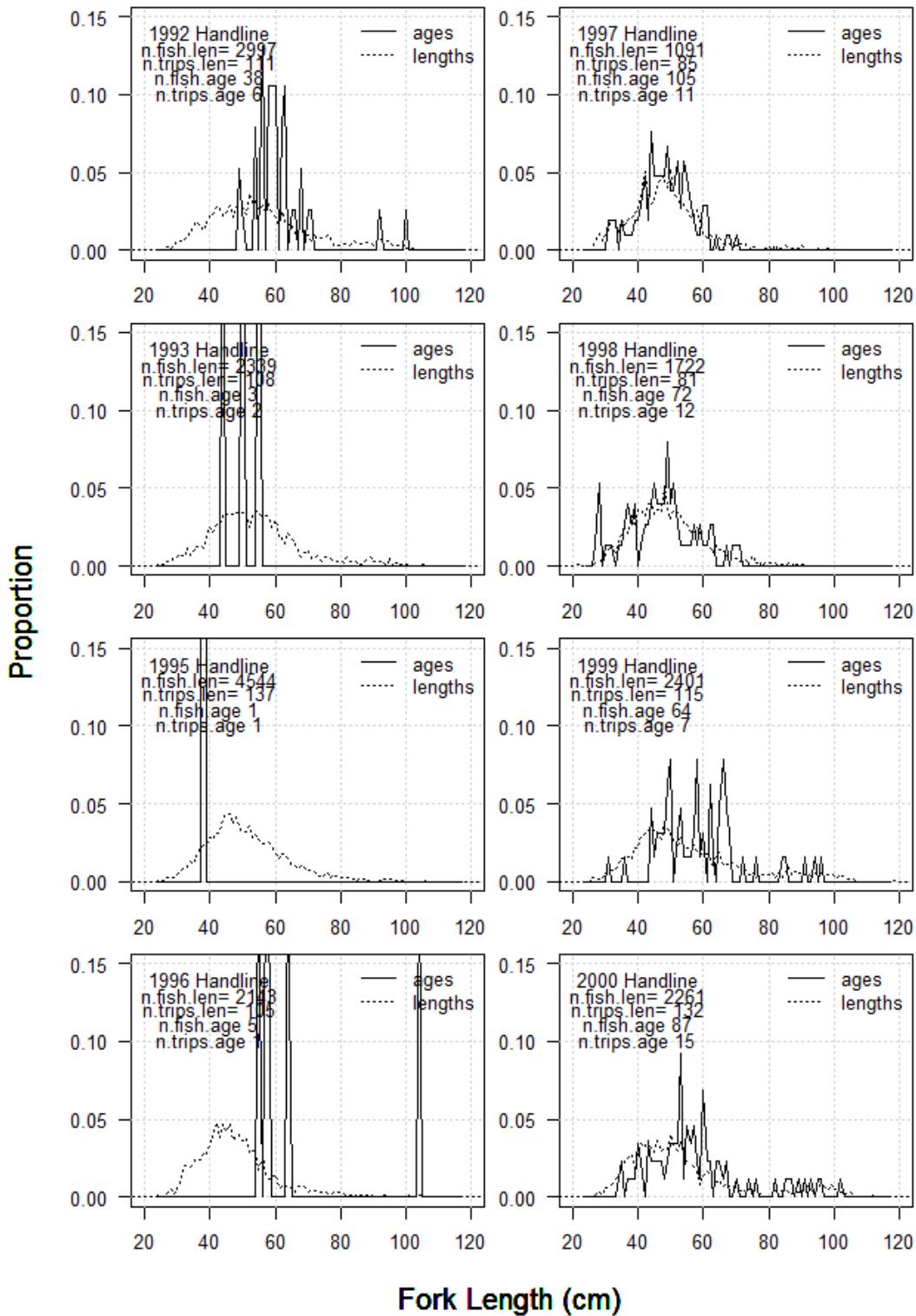


Figure 9. Un-weighted snowy grouper length composition and length composition of the aged fish for handline gear by year.

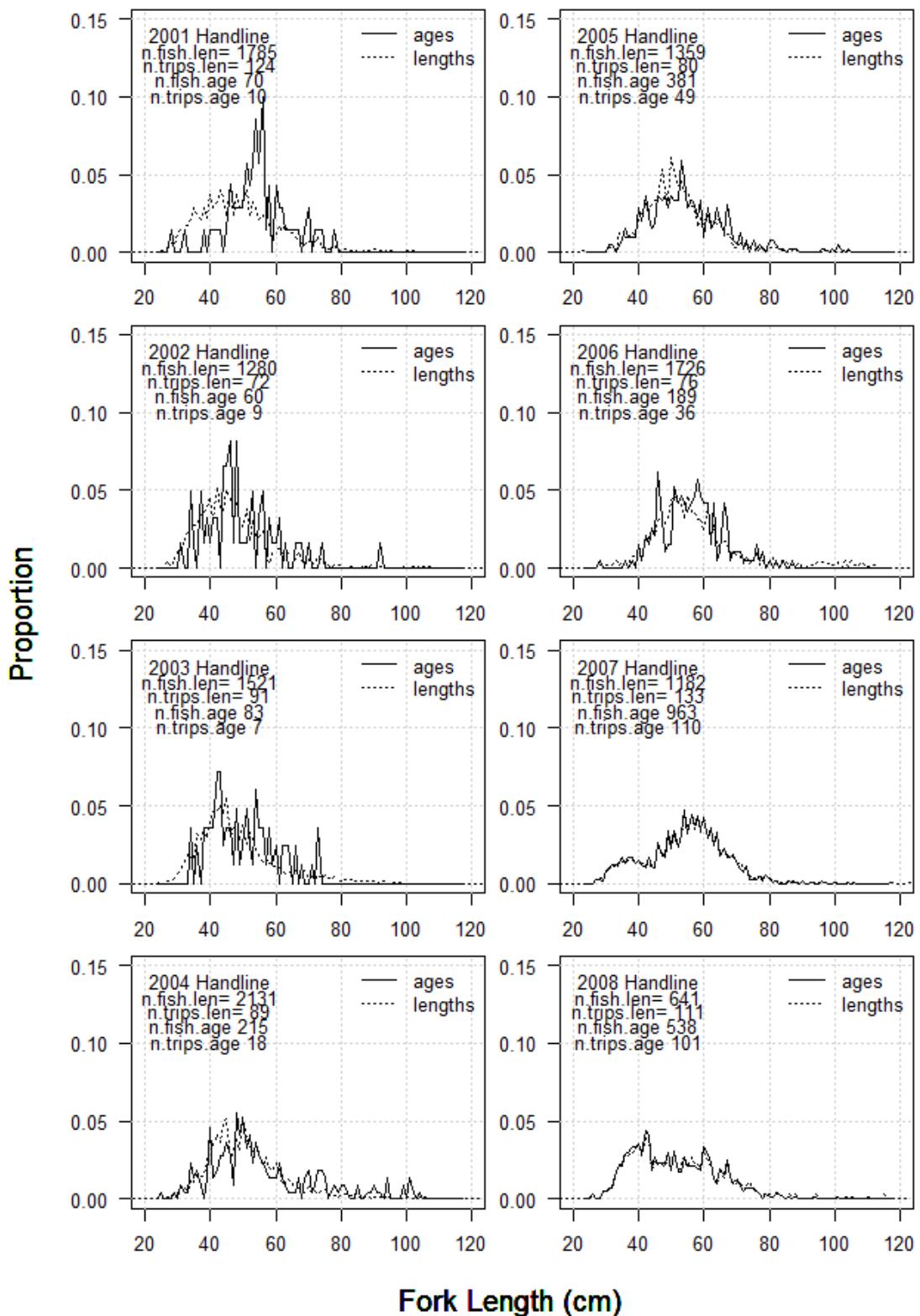


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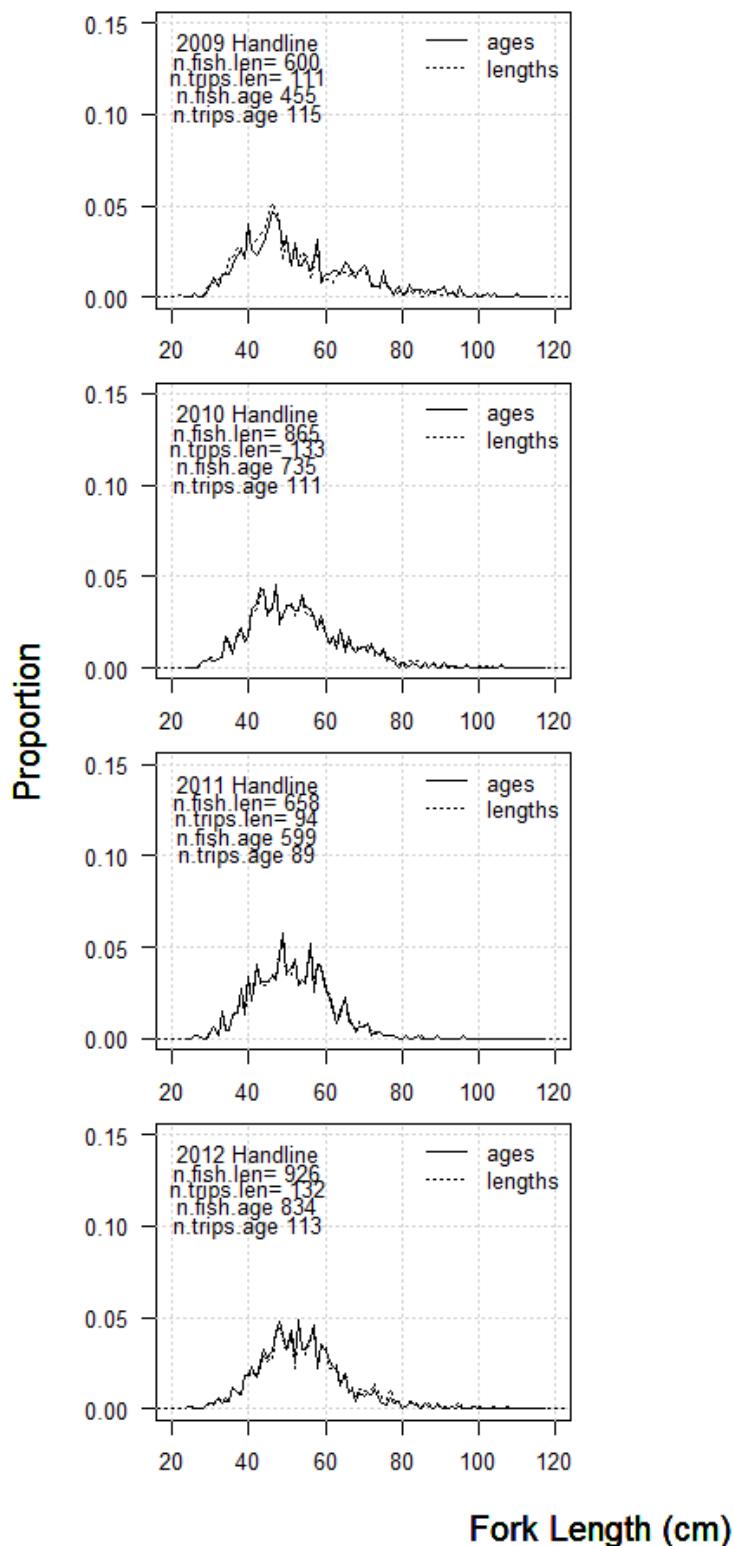


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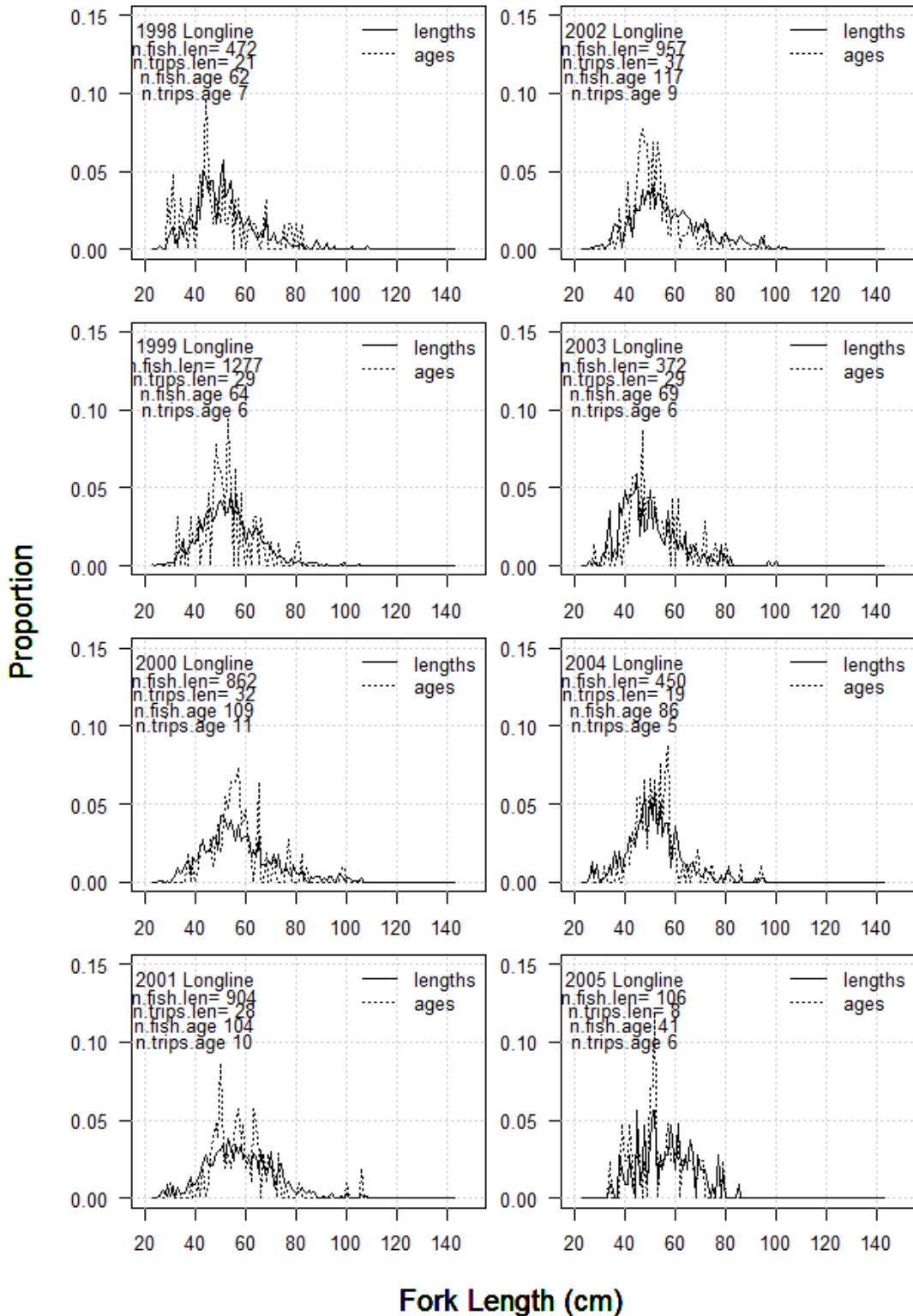


Figure 10. Un-weighted snowy grouper length composition and length composition of the aged fish for longline gear by year.

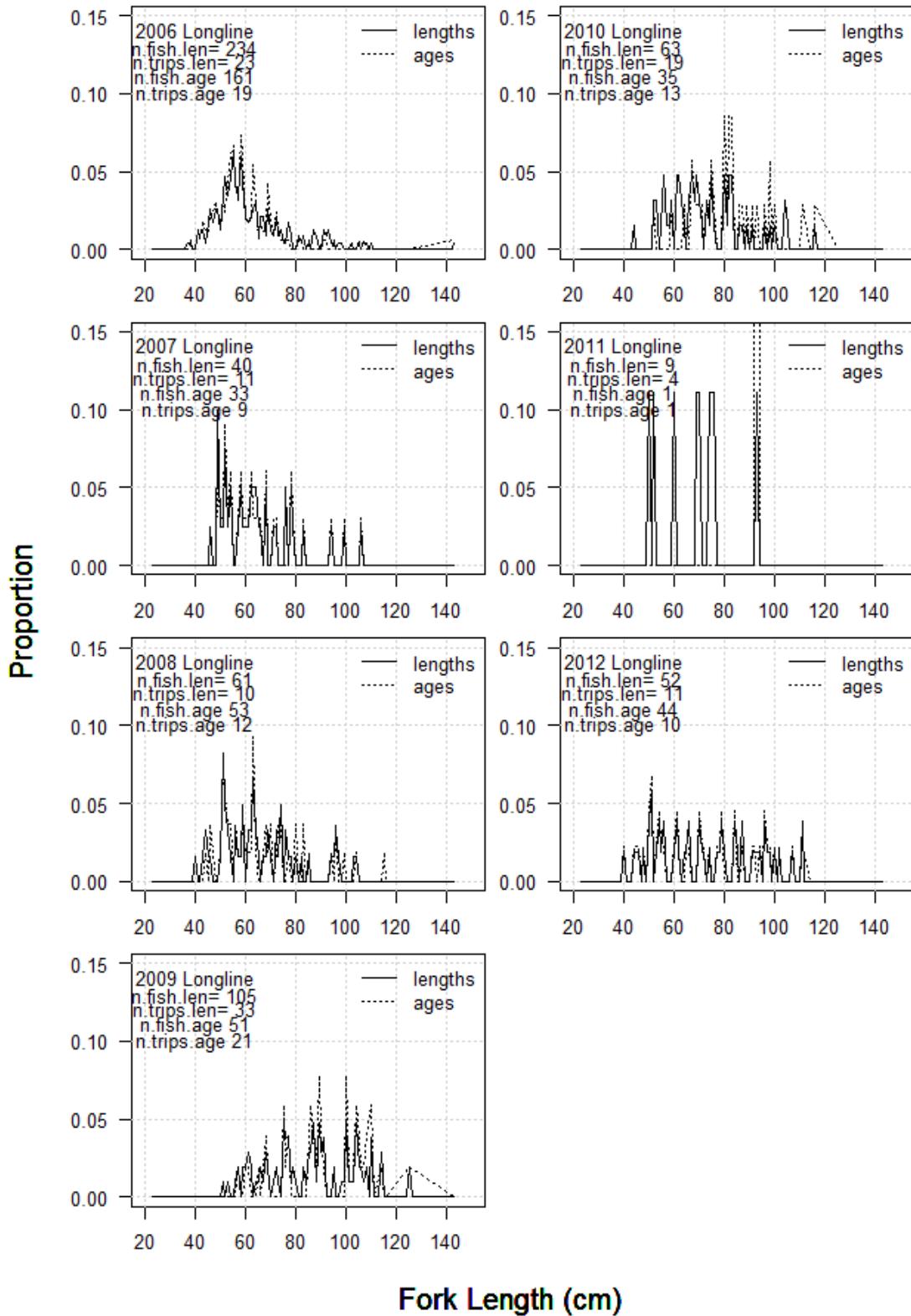


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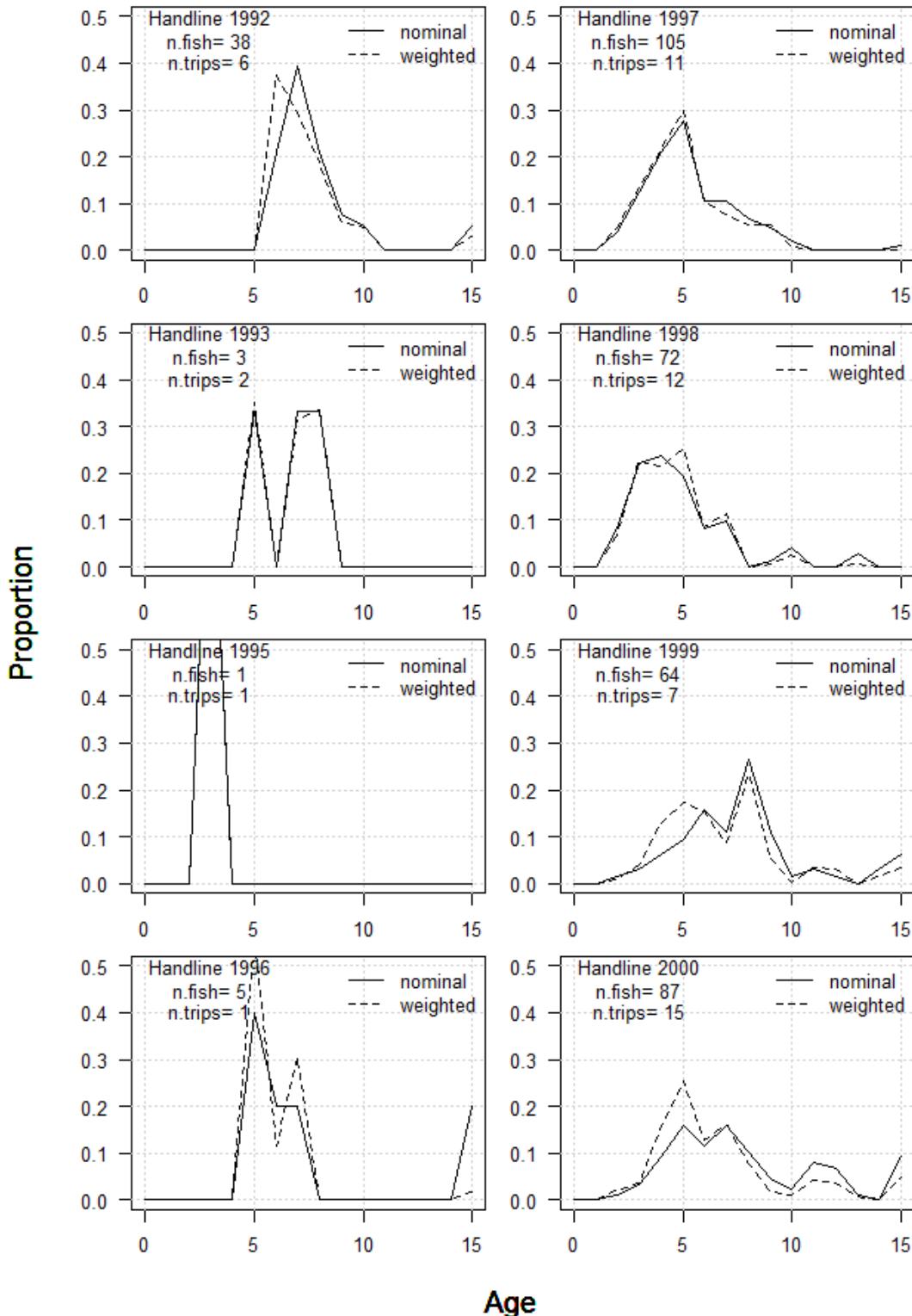


Figure 11. Weighted and un-weighted snowy grouper age composition for handline gear by year.

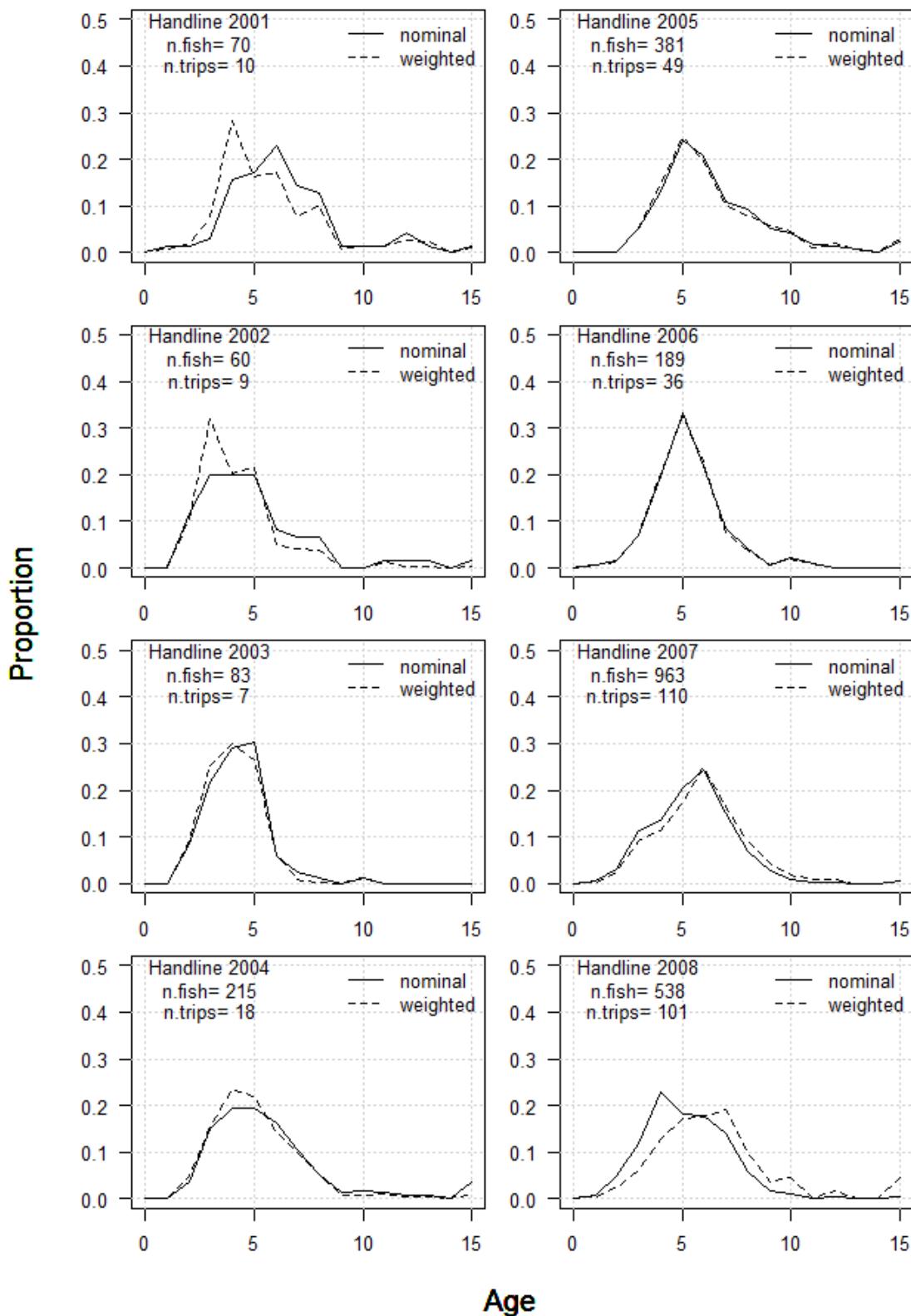


Figure 11. (continued)

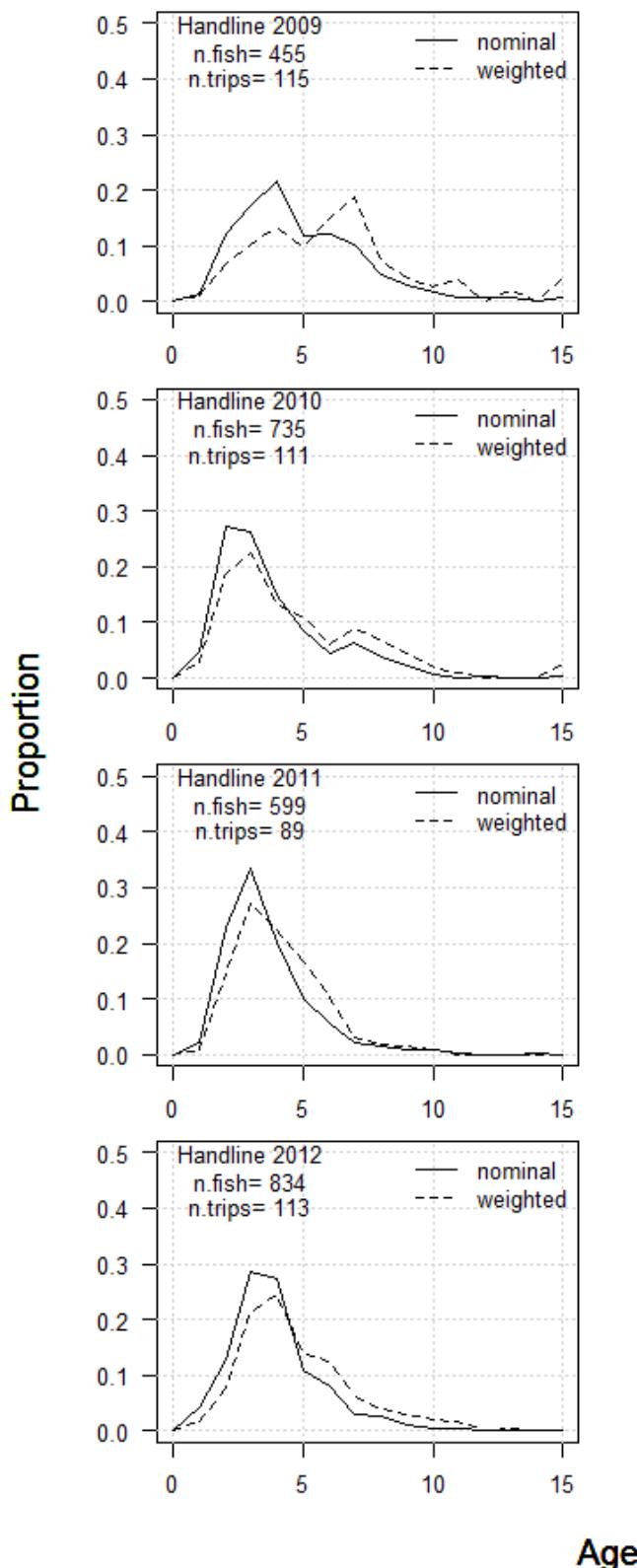


Figure 11. (continued)

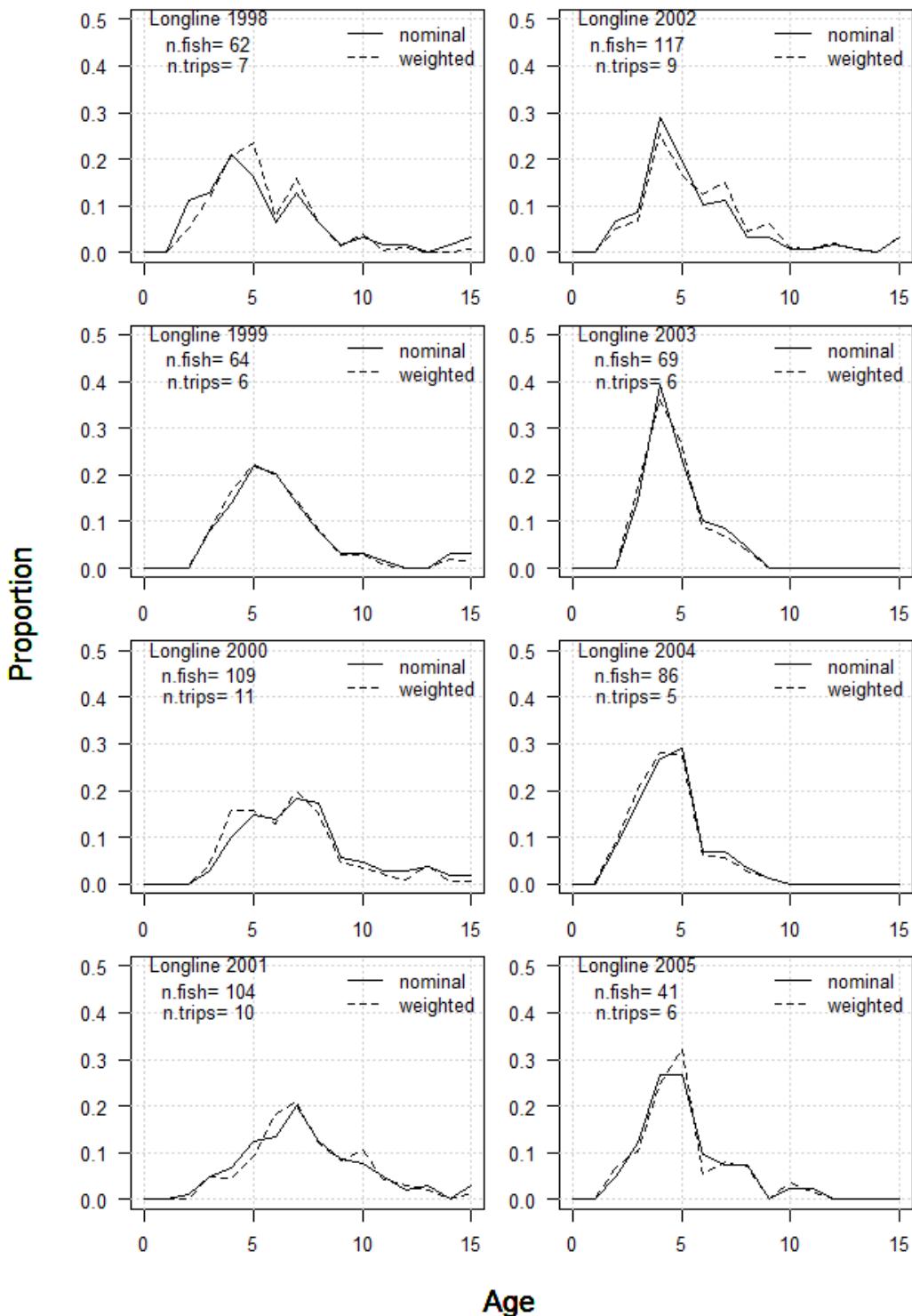


Figure 12. Weighted and un-weighted snowy grouper age composition for longline gear by year.

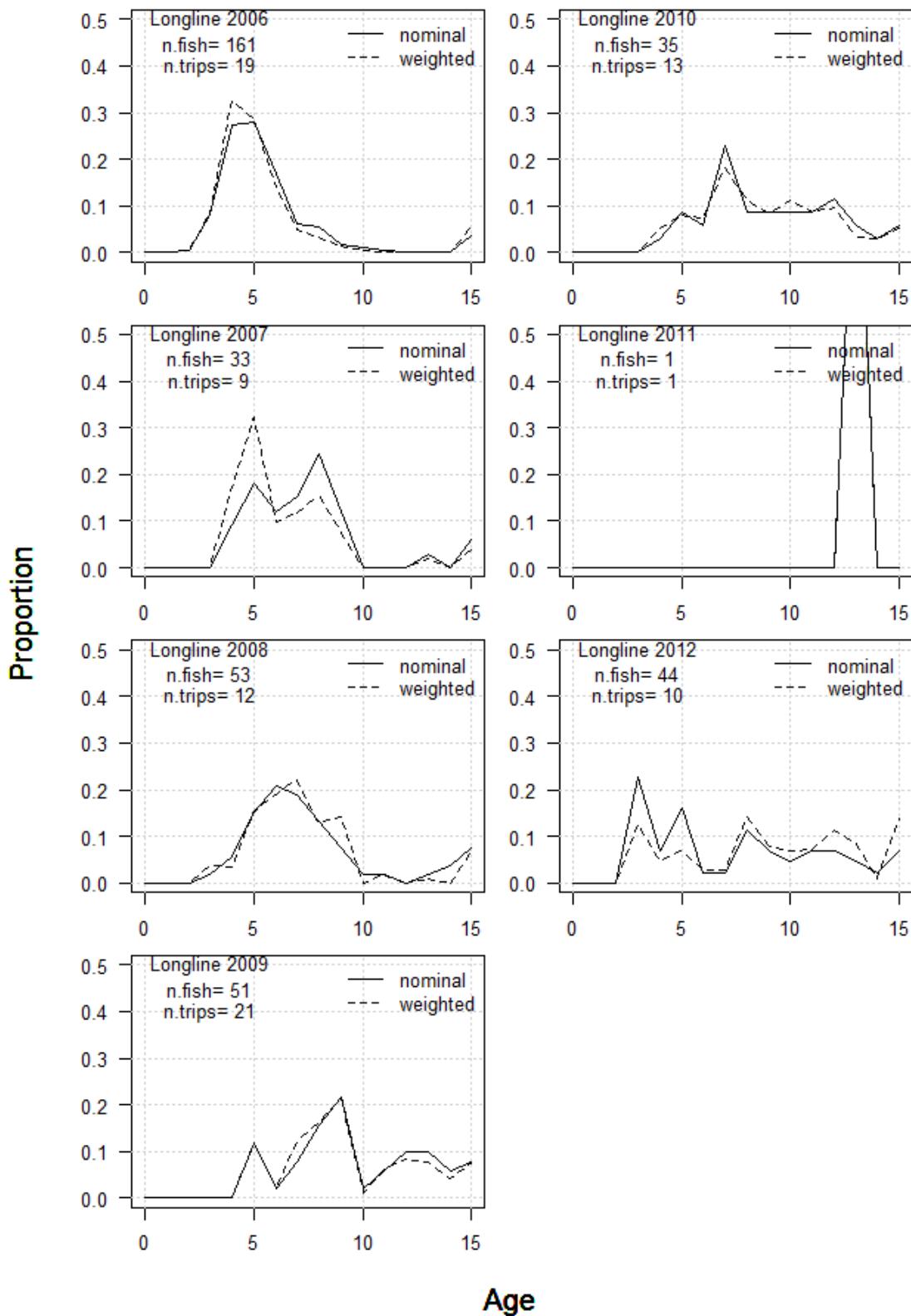


Figure 12 (continued).

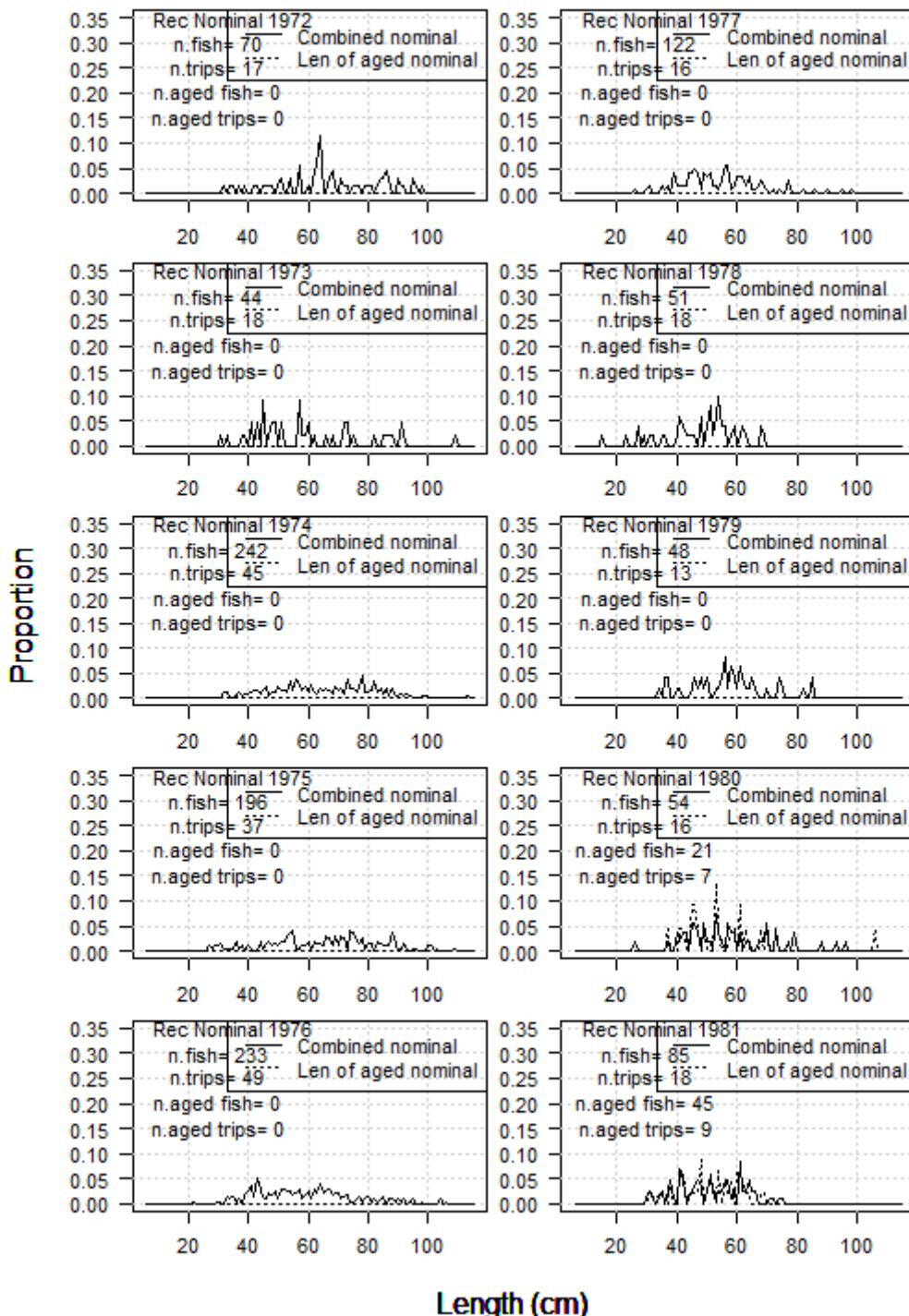


Figure 13. Length composition of aged snowy grouper (1980-1987, 1989-1997, 2002-2012) and all snowy grouper sampled for length (SRHS and MRFSS/MRIP).

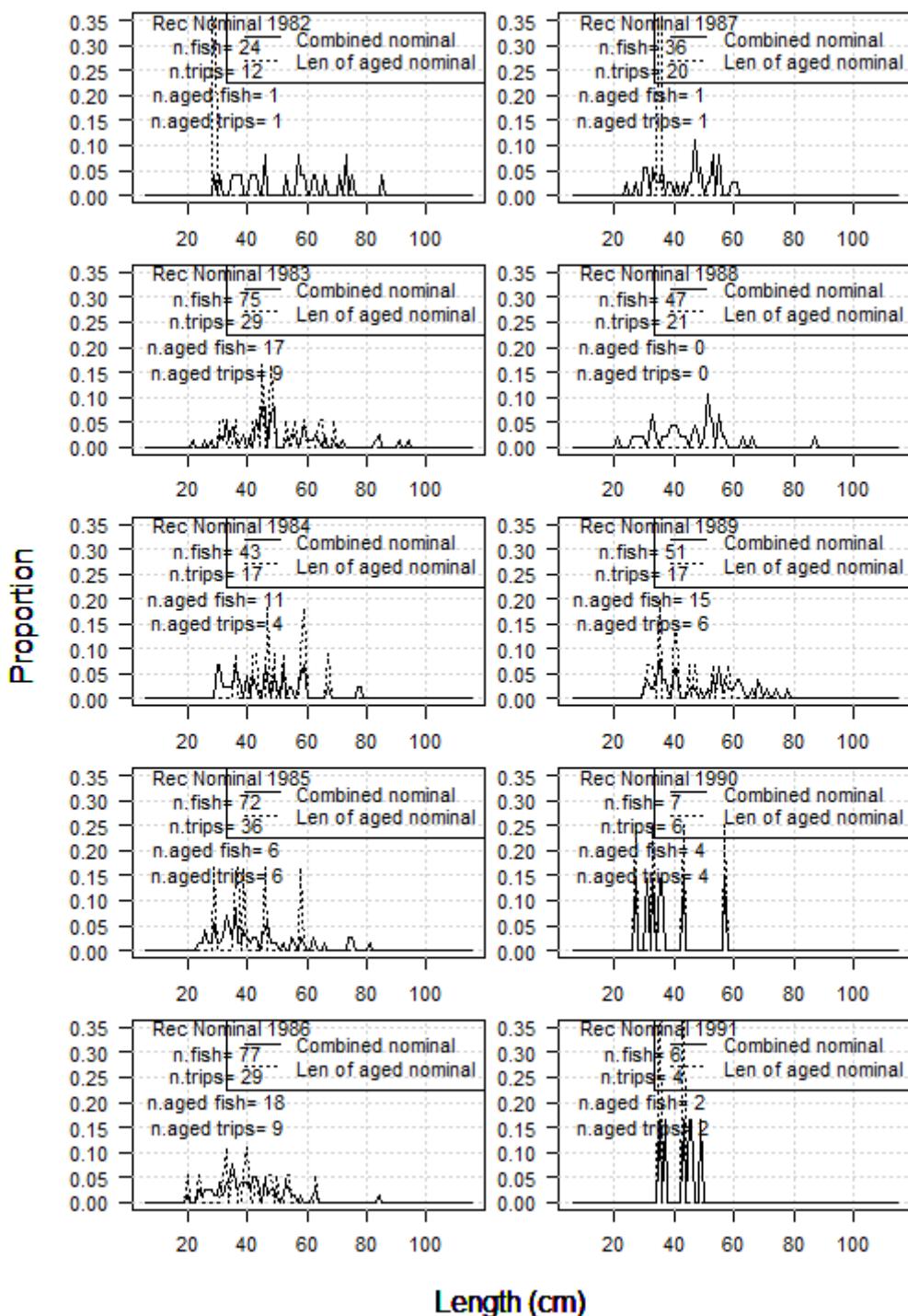


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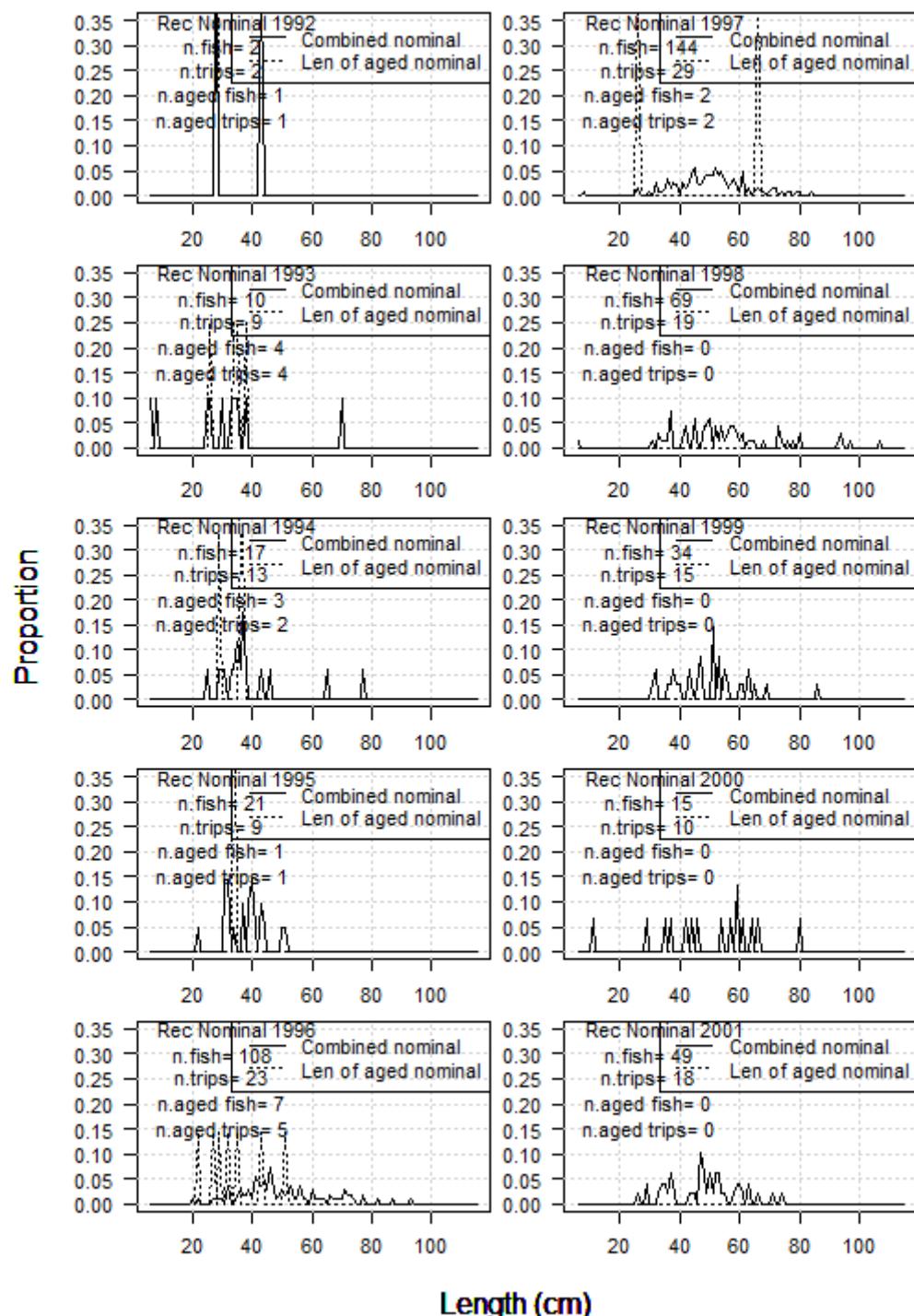


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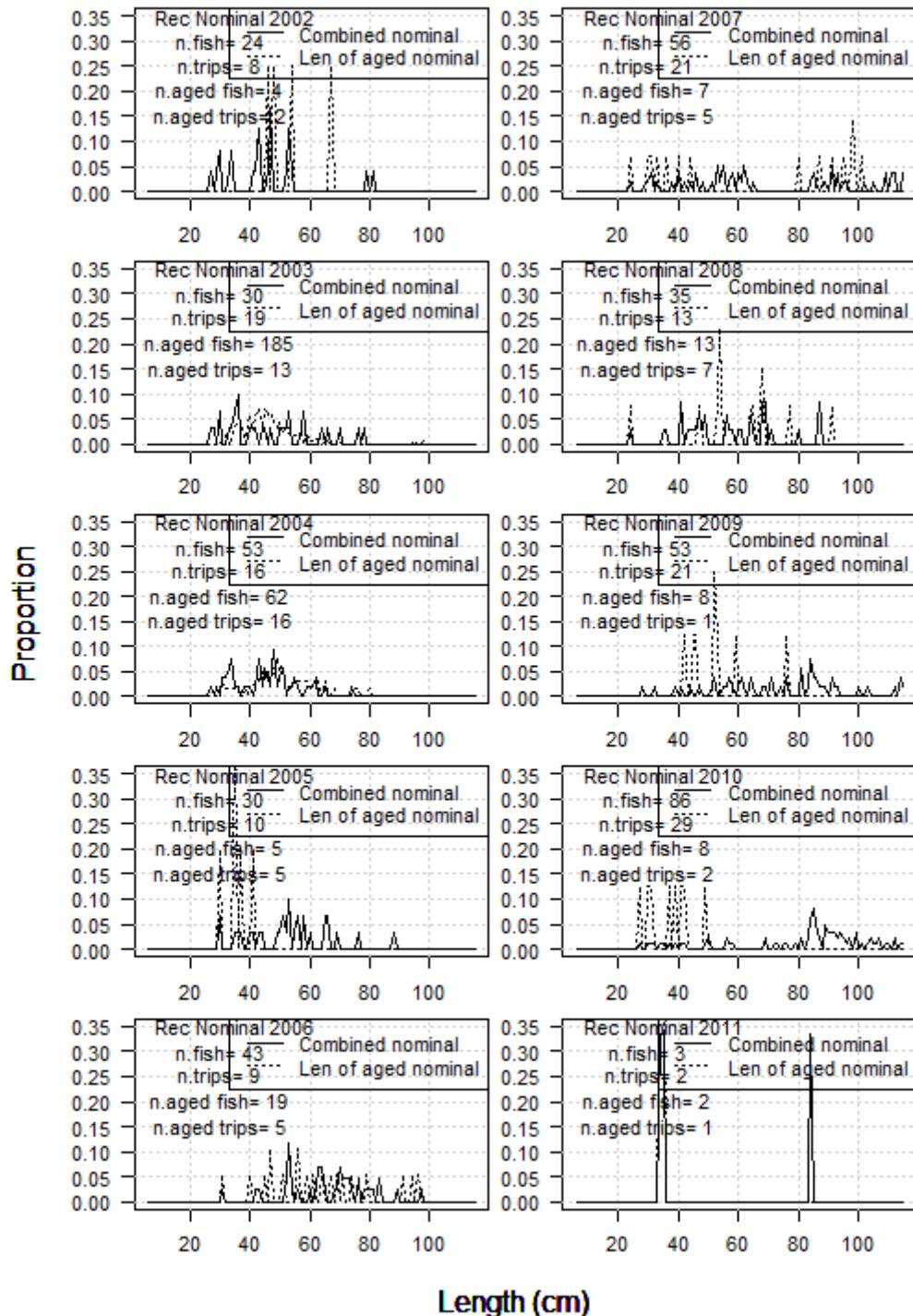


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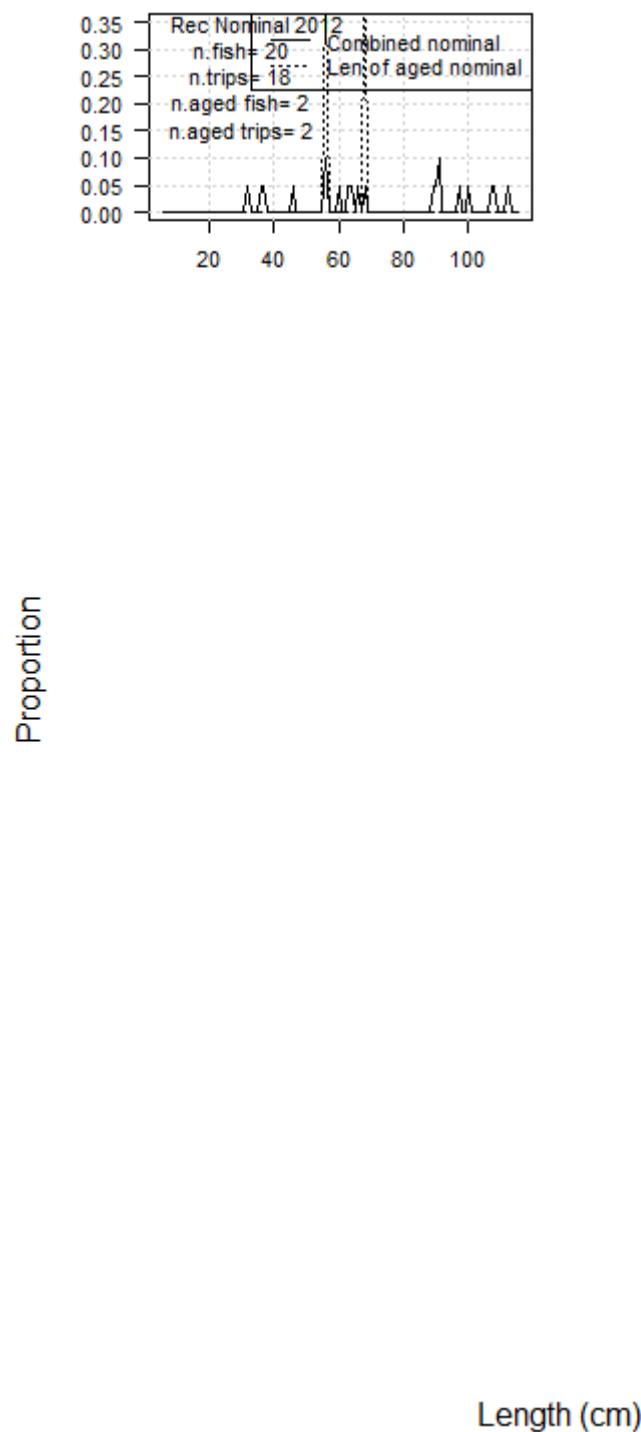


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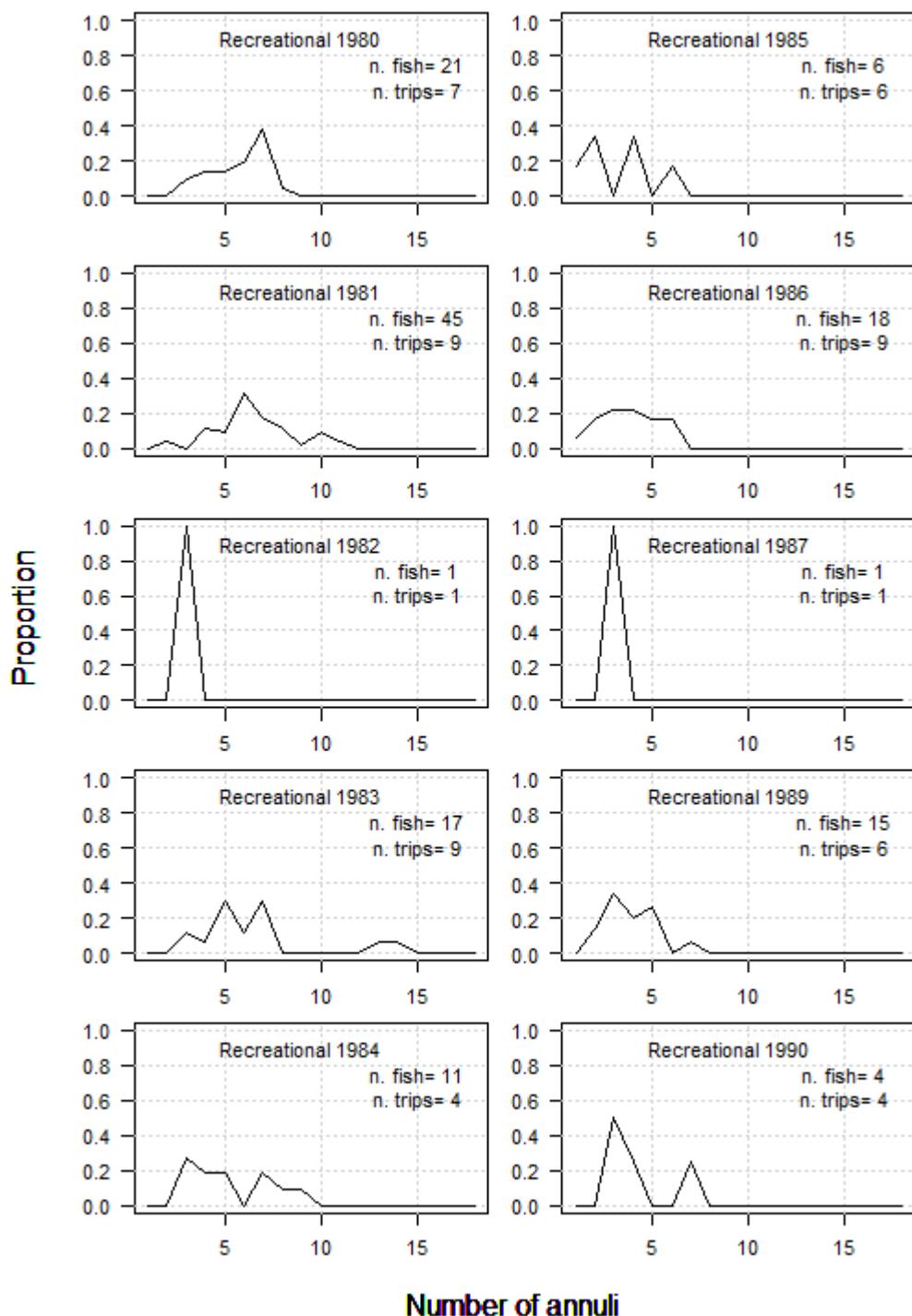


Figure 14. Combined nominal age composition of snowy grouper aged in the recreational fishery (1980-1987, 1989-1997, 2002-2012).

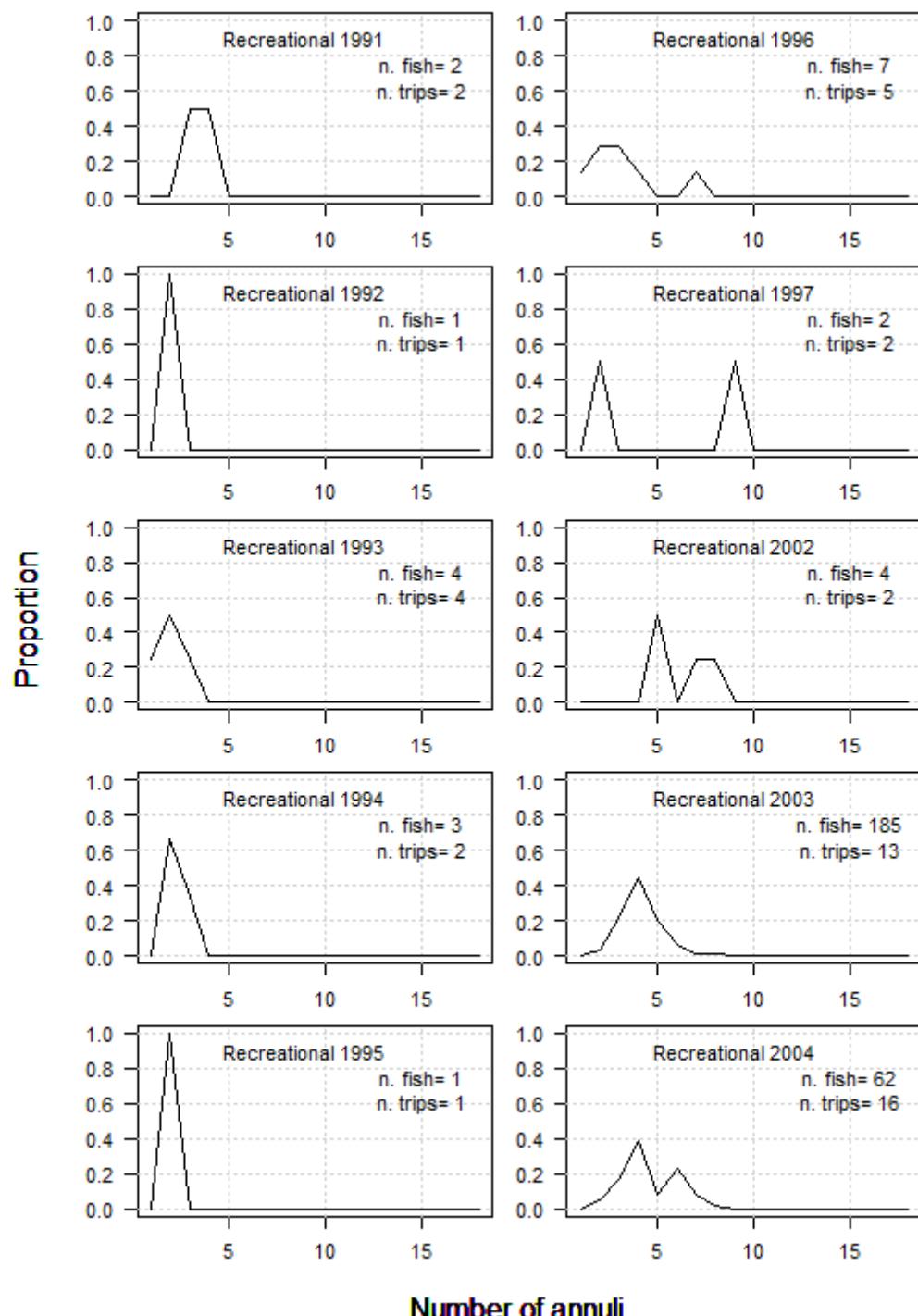


Figure 14 (continued).

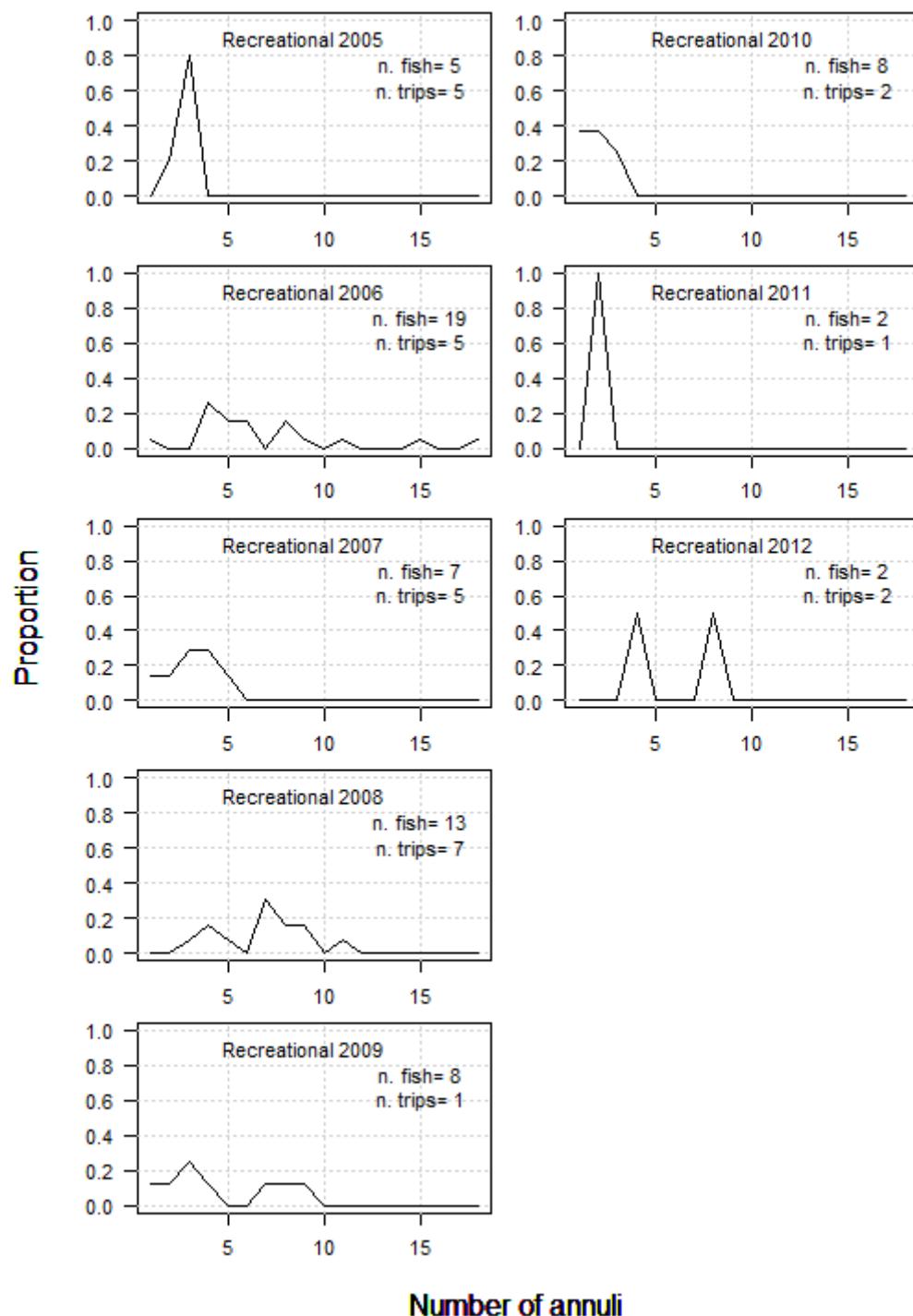


Figure 14 (continued).